-		
SUFERFUND		
Site Well	s G&H	
Break:	6.4	
Other:		

# Draft REMEDIAL DESIGN INVESTIGATION REPORT AND FINAL DESIGN

Northeast Quadrant of the Wells G & H Site Woburn, Massachusetts



Volume I - Appendices Remedial Design Investigation Report Appendix K

#### PREPARED FOR

**UniFirst Corporation** 

and

W.R. Grace & Co. - Conn.

## **SUBMITTED TO**

U.S. Environmental Protection Agency Region 1

October 22, 1991

Environmental Project Control, Inc. Two Grafton Common Post Office Box 536 Grafton, Massachusetts 01519



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 4/11/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. Positive acetone and methylene chloride results reported in Samples S1-1, S1-2, and the trip blank were qualified as less than the reported values. These samples were apparently shipped via overnight courier; however, this information is not provided on the chain of custory forms.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Five samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on April 11, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-1 S1-2	2571	04/11/91
Trip Blank	2572 2573	04/11/91 04/11/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were analyzed within the appropriate holding times.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

Relative response factors for 2-butanone in all initial calibration and continuing calibration samples were calculated by the laboratory using the wrong internal standard. Response factors were corrected by the data validator for 2-butanone, and copies of the revised Forms VI and VII are attached to this report. Any response factor, %RSD, or % difference values given in this report for 2-butanone are corrected values.

#### A. Initial

Initial calibration criteria were met on 4/5/91 with the exception of the % RSD for 2-butanone (actual 46.8; criteria 30) and vinyl acetate (actual 31.8; criteria 30). Data were not affected.

#### B. Continuing

Continuing calibration criteria were met on 4/15/91 with the exception of the % difference for methylene chloride (actual 27.3; criteria 25), carbon disulfide (actual 25.2; criteria 25), 1,2-dichloroethenes (actual 28.0; criteria 25), 2-butanone (actual 43.7; criteria 25), 2-hexanone (actual 31.3; criteria 25), and total xylenes (actual 25.8; criteria 25). Data were not affected.

Continuing calibration criteria were met on 4/16/91 with the exception of the % difference for acetone (actual 27.1; criteria 25) and tetrachloroethene (actual 25.1; criteria 25). Data were not qualified for tetrachloroethene due to this very slight excursion from slight criteria because all other QC criteria for this sample delivery group were met.



#### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was excellent. Values reported for acetone and methylene chloride were qualified as less than the reported values due to laboratory contamination. The samples were apparently shipped to the laboratory via overnight courier; however, this information is not provided on the chain of custody forms.

## VOLA'11LE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO. 2571

Lab Name: PACE

Contract:

ab Code: PACE Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

ample wt/vol:

5. (g/mL) ML

Lab File ID: J2238

Level: (low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Tolumn: (pack/cap) PACK

Dilution Factor:

1.00

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

74-87-3	Chloromethane	10.	ט
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	4.	BJU
	Acetone	10.	U
	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	ַ
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	ט
78-87-5	1,2-Dichloropropane	5.	U
.0061-01-5·	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	บ
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	lυ
71-43-2	Benzene	5.	Ū
0061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	Ū
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	13.	-
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	Ü
108-90-7	Chlorobenzene	5.	Ü
100-41-4	Ethylbenzene	5.	Ü
100-42-5	Styrene	5.	lΰ
1330-20-7	Xylene(total)	5.	Ιΰ

#### 1E

#### VOLA LE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE	NO.
2571	

ab Name: PACE

Contract:

ib Code: PACE Case No.: EPC

SAS No.:

SDG No. 0 0020

fatrix: (soil/water) WATER

Lab Sample ID:

imple wt/vol:

5. (g/mL) ML

Lab File ID: J2238

Level: (low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS: Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q ===
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FORM I VOA-TIC

1/87 Rev.

## VOLATILE ORGANICS ANALYSIS DATA SHEET

'A SAMPLE NO. 31-み 2572

Lab Name: PACE Contract:

00026

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID:

ample wt/vol: 5. (g/mL) ML Lab File ID: J2239

Level: (low/med) LOW Date Received: 4/12/91

Moisture: not dec.100. Date Analyzed: 4/15/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

	· · · · · · · · · · · · · · · · · · ·		*
74-87-3	Chloromethane	10.	ט
74-83-9	Bromomethane	10.	Ü
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	Ü
75-09-2	Methylene Chloride	2.	BUL
67-64-1	Acetone	4.	BULL
75-15-0	Carbon Disulfide	5.	บ
75-35-4	1,1-Dichloroethene	5.	ľU
75-34-3	1,1-Dichloroethane	5.	שו
540-59-0	1.2-Dichloroethene (total	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3		10.	U
71-55-6	1,1,1-Trichloroethane	5.	ט
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	Ŭ
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	ט
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	ט
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6 <del></del>	2-Hexanone	10.	ן ט
	Tetrachloroethene	17.	1
	1,1,2,2-Tetrachloroethane		[ប
108-88-3	Toluene	5.	ן ט
108-90-7	Chlorobenzene	5.	ប
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene(total)	5.	ט

## 1E VOLA LE ORGANICS ANALYSIS DATA SHEET TELL'ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. 2572 00027

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC

SAS No.:

SDG No.:

\_atrix: (soil/water) WATER

Lab Sample ID:

cample wt/vol: 5. (g/mL) ML

Lab File ID: J2239

Level: (low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Jumber TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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# VOLA'LLE ORGANICS ANALYSIS DATA SHEET

'A SAMPLE NO. Trip Blank 2573 00034

Lab Name: PACE

Contract:

ab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

ample wt/vol:

5. (g/mL) ML

Lab File ID: J2243

revel: (low/med) LOW

Date Received: 4/12/91

. Moisture: not dec.100.

Date Analyzed: 4/15/91

>lumn: (pack/cap) PACK

Dilution Factor:

1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

74-87-3Chloromethane	10.	U
74-83-9Bromomethane	10.	Ū
75-01-4Vinyl Chloride	10.	Ü
75-00-3Chloroethane	10.	Ιΰ
75-09-2Methylene Chloride	4.	BOU
67-64-1Acetone	7.	BOUL
75-15-0Carbon Disulfide	5.	Ū
75-35-41.1-Dichloroethene	5.	Ü
75-34-31,1-Dichloroethane	5.	υ
540-59-01,2-Dichloroethene (total)	5.	Ü
67-66-3Chloroform	5.	ŭ
107-06-21,2-Dichloroethane	5.	Ü
78-93-32-Butanone	10.	Ū
71-55-61,1,1-Trichloroethane	5.	Ü
56-23-5Carbon Tetrachloride	5.	Ü
108-05-4Vinyl Acetate	10.	Ü
75-27-4Bromodichloromethane	5.	ΙŪ
78-87-51,2-Dichloropropane	5.	Ū
10061-01-5cis-1,3-Dichloropropene	5.	υ
79-01-6Trichloroethene	5.	Ū
124-48-1Dibromochloromethane	5.	Ü
79-00-51,1,2-Trichloroethane	5.	บั
71-43-2Benzene	5.	Ü
10061-02-6trans-1, 3-Dichloropropene	5.	ប័
75-25-2Bromoform	5.	Ü
108-10-14-Methyl-2-Pentanone	10.	Ιŭ
591-78-62-Hexanone	10.	Ü
127-18-4Tetrachloroethene	5.	Ü
79-34-51,1,2,2-Tetrachloroethane	5.	Ü
108-88-3Toluene	5.	Ŭ
108-90-7Chlorobenzene	5.	ΙŪ
100-41-4Ethylbenzene	5.	Ū
100-42-5Styrene	5.	Ü
1330-20-7Xylene(total)	5.	บั
		ļ

#### 1E VOLAT LE ORGANICS ANALYSIS DATA SHEET TEN\_ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. Trip Blank 2573

ab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC SAS No.:

SDG No.:00035

atrix: (soil/water) WATER

Lab Sample ID:

cample wt/vol:

5. (g/mL) ML

Lab File ID: J2243

ےvel:

(low/med) LOW

Date Received: 4/12/91

Moisture: not dec.100.

Date Analyzed: 4/15/91

Column: (pack/cap) PACK

Dilution Factor:

1.00

Jumber TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

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26. 7. 8.	-
8.	-
8       _	-
.^	-
9	-
0	-

FORM I VOA-TIC

1/87 Rev.

# 6A VOLATILE ORGANICS INITIAL CALIBRATION DATA

ab Name: PACE Contract:

SDG No.: 00042 b Code: PACE Case No.: EPC SAS No.:

instrument ID: J J Calibration Date(s): 4/5/91 4/5/91

trix:(soil/water) WATER Level:(low/med): LOW Column:(pack/cap) PACK

in  $\overline{RRF}$  for SPCC(#) = .300 (0.250 for Bromoform) Max %RSD for CCC(\*) = 30.0% -

AB FILE ID: RRF020= J2147 RRF050= J2143 RRF100= J2146 RRF150= J2145 RRF200= J2144							
COMPOUND	RRF020	RRF050	RRF100	RRF150	RRF200	RRF	RSD
	# .937	.944	1.082		1.092	1	7.3#
romomethane	1.142	1.176					I 7
	* 1.072	1.125			.995		12.3*
vinyl ChlorideChloroethane	676	.749		.758			7.4
Chioroethane Chiorida		1.350	li .				
ethylene Chloride	1.186		.486				
cetone							
Carbon Disulfide	3.018						11.6*
	± 1.028	1.290	1.419	1.194 2.662			9.9#
	# 2.278						
1,2-Dichloroethene (total)_	1.018	1.349		1.216			12.0
Chloroform	2.477	2.956	3.269				10.3*
,2-Dichloroethane	1.654	1.859		1.990	2.127	1.967	11-1 46
-Butanone	909ء	<del>22</del> 1ء				.103(.03)	48.3
1,1,1-Trichloroethane	.539	.651	.760			.670	12.4
Carbon Tetrachloride	.442	.585	.658		.621		14.2 6/
inyl Acetate	.488	.618	1.016			.841	/31.8
_romodichloromethane	.658	.749	.917	.906	.929	.832	14.6
1,2-Dichloropropane	.423	.464	.565	.540	.558	.510	12.4*
cis-1,3-Dichloropropene	.535	.627	.804	.778	.785	.706	16.9
' cichloroethene	.426	.484	.542	.487	.566	.501	11.0
pibromochloromethane	.624	.718	.959	.915	.923	.828	17.9
1,1,2-Trichloroethane	.347	.356	.462	.444	.447	.411	13.3
lenzene	.854	.971	1.152	1.055	1.087	1.024	11.3
:ans-1,3-Dichloropropene	.362	.382	.543	.525	.530	.468	18.9
Bromoform	.443	.505	.725	.727	.732	.626	22.4#
4-Methyl-2-Pentanone	.656	.561	.770	.728	.812	.705	14.1
: -Hexanone	.482	.366	.548	.528	.533	.491	15.1
Letrachloroethene	.408	.572	.573	.490	.536	.516	13.4
1,1,2,2-Tetrachloroethane	698	705	.994	.915	.872	.837	15.6#
Toluene	.618	.754	.841	.725	.821	.752	11.8*
( lorobenzene	.859	1.046	1.180	1.059	1.125		11.5#
( ilorobenzene #	370	.482	.526	.453	.494	.465	12.7*
Ethylbenzene *	.097		.130	.117	.126	.117	11.0
Styrene		.114	.531	.474	.516	.483	10.7
<pre>&gt; 'lene(total)</pre>	.400	.496	.531	.4/4	 	403   =======	=====
Bromofluorobenzene	.727	.835	.879	.830	.861	.826	7.2
1 2-Dichloroethane-d4	1.513	1.675	1.789	1.698	1.784	1.692	6.6
I luene-d8	1.017	1.214	1.234	1.151	1.225	1.168	7.8
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#### 7A VOLA..LE CONTINUING CALIBRATION CHECK

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00058

Instrument ID: J J Calibration Date: 4/15/91 Time: 10:00

Matrix: (soil/water) WATER Level: (low/med): LOW Column: (pack/cap) PACK

n RRF50 for SPCC(#) = .300 (0.250 for Bromoform) Max %D for CCC(\*) is 25.0%

	<u> </u>	T		1
COMPOUND	RRF	RRF50	%D =======	
Chloromethane	# 1.019	1.195	17.2	#
Bromomethane	Î 1.185	1.406	18.7	Ĩ
Vinyl Chloride	<b>*</b> 1.154	1.429	23.9	<del>'.</del>
Chloroethane	.756		21.3	1
Methylene Chloride	1.376	1.751	(27.3)	İ
Acetone	.469	.565	20.6	
Carbon Disulfide	3.835		25.2	
1,1-Dichloroethene	<b>*</b> 1.234	1.510	22.4	<b>.</b>
1,1-Dichloroethane	# 2.687		13.6	#
1,2-Dichloroethene (total)_	1.261		28.0	Î
Chloroform	<b>*</b> 2.958	3.334	12.7	-148
1,2-Dichloroethane	1.967	2.052	_A~3~	770
2-Butanone	(031	C-941	(32.2)	-> 43.77c
1,1,1-Trichloroethane	.670	.740	10.6	
Carbon Tetrachloride	.581	.652	12.2	7.103
Vinyl Acetate	.841	.667	20.7	EX16/28/91
Bromodichloromethane	.832	.842	1.2	EFA 6/26/11
1,2-Dichloropropane	÷ .510	.517	1.5	<b>t</b>
cis-1,3-Dichloropropene	.706	.718	1.8	
Trichloroethene	.501	.561	12.0	
Dibromochloromethane	.828	.823	.6	
1,1,2-Trichloroethane	.411	.422	2.6	
Benzene	1.024	1.175	14.7	
trans-1,3-Dichloropropene	.468	.442	5.6	
Bromoform	.626	.558	10.9 #	
4-Methyl-2-Pentanone	.705	.585	17.1	
2-Hexanone	.491	.337	(31.3)	
Tetrachloroethene	.516	.642	24.4	
1,1,2,2-Tetrachloroethane	837	.857	2.4 #	
Toluene	.752	.914	21.6 *	•
Chlorobenzene	1.054	1.281	21.6 #	
Ethylbenzene	.465	.574	23.5 *	•
Styrene	.117	.144	23.1	
Xylene(total)	.483	.608	25.8	
Bromofluorobenzene	.826	.793	4.1	
1,2-Dichloroethane-d4	1.692	1.461	13.6	
Toluene-d8	1.168	1.181	1.1	

FORM VII VOA

1/87 Rev.

#### 7A VOLA..LE CONTINUING CALIBRATION CHECK

Lab Name: PACE

Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Instrument ID: J J Calibration Date: 4/16/91 Time: 9:59

ab File ID: J2245 Init. Calib. Date(s): 4/5/91 4/5/91

Matrix: (soil/water) WATER Level: (low/med): LOW Column: (pack/cap) PACK

in RRF50 for SPCC(#) = .300 (0.250 for Bromoform) Max %D for CCC(#) is 25.0%

COMPOUND	RRF	RRF50	%D	
Chloromethane	1.019	1.034	1.4	<u>_</u>
Bromomethane	1.185		18.5	Ţ
Vinyl Chloride	1.154	1.330	15.2	! ★
Chloroethane	.756	.863	14.2	1
Methylene Chloride	1.376			1
Acetone	.469	.596	27.1	<b>)</b>
Carbon Disulfide	3.835	4.575	19.3	
1,1-Dichloroethene	1.234	1.474	19.5	! *
1,1-Dichloroethane #	2.687	2.896		<del>#</del>
1,2-Dichloroethene (total)	1.261	1.507		Ϊ
Chloroform *	2.958	3.279	10.8	<u> </u>
1,2-Dichloroethane	1.967	2.010		<del>&gt;</del> ·124
2-Butanone	.031	.036		Dao. 7
1,1,1-Trichloroethane	.670	.745	11.3	, 0.0, ,
Carbon Tetrachloride	.581	.657	13.0	> 10-
Vinyl Acetate	.841	.749	10.9	7/03
Bromodichloromethane	.832	.834	.3	1 larks.
1,2-Dichloropropane *	.510	.536	5.2	24 6/28/91
cis-1,3-Dichloropropene	.706	.735	4.1	1
Trichloroethene	.501	.562	12.2	
Dibromochloromethane	.828	.865	4.4	
1,1,2-Trichloroethane	.411	.439	6.7	
Benzene	1.024	1.141	11.5	
trans-1,3-Dichloropropene	.468	.441	5.8	
Bromoform #	.626	.618	1.3	<b>,</b>
4-Methyl-2-Pentanone	.705	.664	5.9	
2-Hexanone	.491	.410	16.5	
Tetrachloroethene	.516	.645	(25.)	
1,1,2,2-Tetrachloroethane #	.837	.952	13.7	
Toluene *	.752	.876	16.5 *	1
Chlorobenzene #	1.054	1.237	17.3 #	}
Ethylbenzene*	.465	.571	22.8 *	
Styrene	.117	.138	18.1	
Xylene(total)	.483	.585	21.0	
Bromofluorobenzene	.826	.817	1.2	
1,2-Dichloroethane-d4	1.692	1.511	10.7	
Toluene-d8	1.168	1.213	3.8	

FORM VII VOA

1/87 Rev.



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

UNIFIRST TREATMENT SYSTEM TEST

INORGANIC ANALYSES DATA

Samples Collected 4/11/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were good. Positive results for barium, iron and lead (Sample S1-1 only) were estimated. Positive results for zinc in Samples S6-1, S6-2, and R4 were rejected due to field blank contamination. All other results may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without Validator qualified results are annotated with the reservations. following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Inorganic Data Validation

for

#### Environmental Project Control, Inc.

#### Samples Collected 4/11/91

#### Case Narrative

This group contained seven water samples including one field blank (R-4). All of the samples were analyzed for total metals.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
S1-1	2571	4/11/91
S1-2	2572	4/11/91
S6-1	2574	4/11/91
R-1	2575D	4/11/91
R-2	2576MS	4/11/91
R-4	2578	4/11/91
S6-2	2579	4/11/91

The areas reviewed during validation are listed below.



#### CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
  - V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
  - XII. Overall Assessment



#### Data Validation

#### I. Holding Times

All metals analyses were conducted within acceptable holding times.

#### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 40 ppb. Since antimony was not detected above 10 ppb in any sample, data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. Nickel, silver, and chromium had percent recoveries outside of the  $\pm 20\%$  criteria. No positive results were reported for these analytes. Detection limits for nickel, silver, and chromium were estimated.

#### III. Blanks

No blanks were above the CRDLs or less than the negative CRDLs.

The preparation blank contained nickel (-25.0 ppb) below its negative IDL.

Continuing calibration blanks for vanadium (7.0 and 5.0 ppb) were greater than the IDL.

The field blank contained zinc (10.0 ppb).

Values at or below the action level (five times the highest blank level) were qualified with a "U" at the reported values.

<u>Metal</u>	<u>Sample</u>	<u>Qualified Result</u>
v	S6-2	25.0 U
Zn	S6-1	17.0 U
	R-4	10.0 U
	S6-2	23.0 U



Significant negative concentrations were reported for antimony, lead and copper in calibration blanks. Detection limits were raised for these analytes, and data was qualified as follows:

<u>Metal</u>	Sample	<b>Qualified Result</b>
Sb	S6-1	1.7 U
Pb	S6 <b>-</b> 1	1.6 U
	S6-2	1.6 U
Cu	S1-1	11.5 U

#### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

#### V. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except for barium and iron. Data were qualified as follows:

<u>Metal</u>	<u>Sample</u>	Qualified Result
Ва	S1-1	22.0 J
	S1-2	21.0 J
	S6-1	18.0 J
	S6-2	18.0 J
Fe	S1-1	375 J
	S1-2	170 J

#### VI. Duplicate Sample Analysis

Duplicate analyses were satisfactory.

#### VII. Laboratory Control Sample Analyses

Laboratory control sample results were satisfactory.

#### VIII. Furnace Atomic Absorption Analysis

Duplicate injections were performed for all samples and agreed within +20%.

The post digestion spike recovery for lead in Sample S1-1 did not meet criteria. The result for lead in this sample was qualified as estimated.



#### IX. ICP Serial Dilution Analysis

Serial dilutions were conducted on Sample S1-1. Results were satisfactory.

#### X. Detection Limits

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### XI. Sample Result Verification

Form I's were correct.

#### XII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. Nickel, silver, and chromium had percent recoveries outside of the  $\pm 20\%$  criteria. No positive results were reported for these analytes. Detection limits for nickel, silver, and chromium were estimated.

The preparation blank contained nickel (-25.0 ppb) below its negative IDL.

Continuing calibration blanks for vanadium (7.0 and 5.0 ppb) were greater than the IDL.

The field blank (RW-4) contained zinc (10.0 ppb).

Values at or below the action level (five times the highest blank level) were qualified with a "U" at the reported values.

Significant negative concentrations were reported for antimony, lead and copper in calibration blanks. Detection limits were raised for these analytes, and data was qualified as less than the raised detection limits.

Matrix spike analyses for were satisfactory except for barium and iron. Positive results were qualified as estimated.

The post digestion spike recovery for lead in Sample S1-1 did not meet criteria. The result for lead in this sample was qualified as estimated.

### U.S. EPA - CLP

# INORGANIC ANALYSES DATA SHEET

EPA SA	MPDE	BO.
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ah Name: PAC	e incorporai	ED	Contract: E	PC	s1-1
	_				SDG No.:
					le ID: 2571
atrix (soil/	water). Ware	.K		Dan Samp	16 10. 25/1
evel (low/me	i): LOW_	:		Date Rec	eived: 04/12/91
Solids:		O			
C	oncentration	Units (ug	/L or mg/kg dry	y weight)	: UG/L_
	CAS No.	Analyte	Concentration	c o	M
		Aluminum	195_		P_
		Antimony_	0.80_		F_
	7440-38-2	Arsenic_	1.0_	<u>u</u>	F_
		Barium_	22.0_		P_
	\$	Beryllium		<u>u</u>	P_
		Cadmium	3.0_	u	P_
	7440-70-2	Calcium	84800_		P_
	7440-47-3	Chromium_		<u>ū</u> J	P_
	7440-48-4	Cobalt	6.4_	U	P_
	7440-50-8	Copper		B 11.54	P_
	7439-89-6	Iron	375_		P_ F_
	7439-92-1	Lead	3.3	- X-1	P P
	7439-95-4	Magnesium	11800_	-	
	7439-96-5	Manganese	65.0	<del></del>	P_ CV
	7439-97-6	Mercury	0.20_		
	7440-02-0	Nickel	8.6_ 3460	B 3	P_ P_
	,	Potassium		اصــــا ا	
		Selenium_		0 7	F_ P_
	7440-22-4 7440-23-5	Silver Sodium	141000_	0   2	5-1
	7440-23-5	Thallium	0.70	<del></del>	E-
	7440-28-0	Vanadium	4.2	ا——ا	P_     F_     P_
	7440-62-2	Zinc	231_		p-
	7440-00-0	Cyanide		-	P_ NR
or Before:	COLORLESS	Clarit	y Before: CLEA	R_	Texture:
or After:	COLORLESS	Clarit	y After: CLEA	R_	Artifacts:
ments:					
					<del></del>
		<del></del>	,		
					<del></del>

#### **، 1** INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.
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ab Name: PAC	E INCORPORAT	PED	Contract: E	PC			S1-	-2	
Lab Code:	_	se No.: _				SI	G No.:		
.utrix (soil/	water): WATE	CR .		L	ab Samp	le I	D: 257	72 000	12
:vel (low/me	d): LOW_	<del></del>		D	ate Rec	eive	d: 04/	/12/91	
ያ Solids:		.0							
С	oncentration	Units (ug,	/L or mg/kg dr	Y 1	weight)	: UG	/L_		
	CAS No.	Analyte	Concentration	С	Q	м			
	7429-90-5	Aluminum_	195_	ប		P_			
	7440-36-0	Antimony_	0.80	U		F_			
	7440-38-2	Arsenic	1.0_	ש	<del></del>	F_			
	7440-39-3	Barium	21.0	B		P_			
	7440-41-7	Beryllium	1.1_	U		P_ P			
	7440-43-9 7440-70-2	Cadmium	3.0_	U		P_			
	7440-70-2	Chromium_	84500_ 9.5	ਹ		P-			
	7440-48-4	Cobalt	6.4	ט	7	P_ P			
	7440-50-8	Copper_	4.5	U		$\mathbf{p}^{-}$			
	7439-89-6	Iron	170		-WJ	P_			
	7439-92-1	Lead	4.0	-		F_			
	7439-95-4	Magnesium	11600	-		P			
		Manganese	20.0	_		P_			
		Mercury	0.20	บิ		CV			
	,	Nickel	8.6	U	J	P_P			
	7440-09-7	Potassium	3210	B		P_			
		Selenium_	0.50	บ		F_			
	7440-22-4	Silver	8.1_	ט	<u>J</u>	P_			
	7440-23-5	Sodium	137000_	_		P_ F_			
	7440-28-0	Thallium_		ַ		F_			
		Vanadium_	4.2_	U		P_			
	7440-66-6	Zinc	212_	_		P_			
		Cyanide		_		NR			
				_					
lor Before:	COLORLESS	Clarit	y Before: CLEA	R_		Text	ture:		-
or After:	COLORLESS	Clarit	y After: CLEA	R_	•	Art	ifacts	:	
ments:									

# INORGANIC ANALYSES DATA SHEET

ab Name: PAC	E_INCORPORAT	TED	Contract: E	PC	S6 <b>-</b> 1
Lab Code:	Ca	ase No.:	SAS No.		SDG No.:
atrix (soil/	water): WATE	ER		Lab Samp	le ID: 2594 <u>0021</u>
evel (low/med	d): LOW_	<del></del>		Date Rec	eived: 04/12/91
Solids:		.0			
Co	oncentration	Units (ug	/L or mg/kg dr	y weight):	: UG/L_
-	CAS No.	Analyte	Concentration	C Q	М
	7429-90-5	Aluminum	972	[-	P
	7440-36-0	Antimony_	1.6	B 1.74	F
	7440-38-2	Arsenic	12.5		F
	7440-39-3	Barium	18.0_	M T	P_
	7440-41-7	Beryllium	1.1	ים די	p
		Cadmium	3.0	ט –	P
	7440-70-2	Calcium	71200		P_
	7440-47-3	Chromium	9.5		P_
	7440-48-4	Cobalt	6.4	ט	P_
	7440-50-8	Copper	4.5	ט	PI
	7439-89-6	Iron	97.7	אבן ט	P_
	7439-92-1	Lead	102	B T. WIL	F_
	7439-95-4	Magnesium	11900_	_]	P_
		Manganese	5.0		P_
		Mercury	0.20_	U	cv
	7440-02-0	Nickel	8.6_	<u> </u>	P_
	7440-09-7	Potassium		<b>B</b>	P_
	7782-49-2	Selenium_			F_]
	7440-22-4	Silver		n 7	P_
	7440-23-5	Sodium	144000_		P_
		Thallium_	0.70_		<u>F_</u>
	7440-62-2	Vanadium_	48.0	<b>B</b>	P
	7440-66-6		17.0_		P_
		Cyanide			NR 
lor Before:	COLORLESS	Clarit	y Before: CLEA	R_	Texture:
or After:	COLORLESS	Clarit	y After: CLEA	R	Artifacts:
mments:					

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THETTE	AMATMORG	D3 013	CHERT

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LPA	SAMPLE	NO.

ah N	ame:	PACE INC	ORPORA'	red	Contract: E	PC			R4
								I <del></del>	<del></del>
Lab Co	ode: _		Ca	ase No.:	SAS No.	: _		SDG	No.:
atri	x (so:	il/water	): WATI	ER		Lal	b Samp	le ID:	2578()()2
evel	(low/	/med):	TOM_			Dat	te Rec	eived:	04/12/91
s Soli	ids:			_0					
		Concen	tration	units (ug	/L or mg/kg dr	y we	eight):	UG/L	_
-		CAS	No.	Analyte	Concentration	c	Q	М	
		743	00 E	31i		_ -		_	
			9-90-5 0-36-0	Aluminum_ Antimony_	195 0.80_	- ט		P_	
			)-38-0 )-38-2	Arsenic	1.0			F_ F_ P_	
			)-39-3	Barium	12.5	ן ט		P-	
			0-41-7	Beryllium		<u>"</u>		P_	
			-43-9	Cadmium	3.0	ט		P	
			70-2	Calcium	448	ן ט		P	
		1	-47-3	Chromium	9.5	تاتا		P	
		7440	-48-4	Cobalt_	6.4	ַ ט		P	
		7440	-50-8	Copper	4.5	ַ   ט		P_  P_	
١		7439	-89-6	Iron	97.7	ַ ט			
,			-92-1	Lead	0.50	ַ ע		F_	
			-95-4	Magnesium	509_	ַ ע		P_	
		1	-96-5	Manganese	1.5_	_ ט		P_	
			-97-6	Mercury	0.20_	ַ ע		CV	
		1	-02-0	Nickel	8.6_	<u>n 7</u>		P_	
		1		1 )	760_	_ ע	<del></del>	P_	
			-49-2	Selenium_	0.50	דויי		F_	
			-22-4	Silver	8.1	히기		P_	
			-23-5 -28-0	Thallium	390_ 0.70	_ ט		P_	
			-62-2	Vanadium		-   0		F_	
	•		-66-6	Zinc	4.2_	BID	1.	P_ P_	
		/440	-00-0	Cyanide_		۲۱۲		NR	
olor 1	Before	e: COLO	RLESS	Clarit	y Before: CLEA	R_	1	Textur	e:
or I	After	: COLO	RLESS	Clarit	y After: CLEA	R_		Artifa	cts:

## U.S. EPA - CLP

# 1 INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.
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ab N	ame: PAC	E_INCORPORAT	red	Contract: E	PC		S6	-2 
Lab Code: Case No.:			SAS No.	SDG No.	SDG No.:			
atri	x (soil/	water): WATE	ER		I	ab Samp	le ID: 25	0923
evel	(low/me	d): LOW_			D	ate Rec	eived: 04	/12/91
% Sol:	ids:		_0					
	C	oncentration	Units (ug	/L or mg/kg dr	Y	weight)	: UG/L_	
		1	<del>1</del>		Т		<del></del> 1	
		CAS No.	Analyte	Concentration	C	Q	M	
		7429-90-5	Aluminum	849	-	ļ	P_	
		7440-36-0	Antimony_	0.80	Ū		F_	
		7440-38-2	Arsenic	5.0			F_	
		7440-39-3	Barium	18.0	芦芦		P_	
		7440-41-7	Beryllium	1.1	שׁ		P_	
		7440-43-9	Cadmium	3.0_	ַע		P_	
		7440-70-2	Calcium_	79900_	1_	]	P_	
		7440-47-3	Chromium_	9.5	U	<u> </u>	P	
		7440-48-4	Cobalt	6.4_	ם		P_	
		7440-50-8	Copper	4.5	U	ļ	P_	•
		7439-89-6	Iron	97.7_	U	N	P	
		7439-92-1	Lead	0.80_	B	1,66	<u>F_</u>	
		7439-95-4	Magnesium	12400_	=		P	
		7439-96-5	Manganese	5.0			P_	
		7439-97-6 7440-02-0	Mercury Nickel	0.20_		T	CV	
		7440-02-0	Potassium	8.6	Ü	7	P_ P	
		ì	Selenium	3720_ 0.50_	D D			
			Silver	8.1	บ	<u> </u>	F_	
			Sodium	141000	١	·	P_   P_	
		7440-28-0	Thallium	0.70	Ū		F_	
		7440-62-2	Vanadium		B	W	P_	
		7440-66-6	Zinc	23.0_	$\neg$		p-	
			Cyanide				P_ NR	
		·	· · ·		_1		<u>-</u>	
otor i	Before:	COLORLESS	Clarit	y Before: CLEA	IR_	-	Texture:	
lor A	After:	COLORLESS	Clarit	y After: CLEA	R_	-	Artifacts	:
∩mment	ts:							
			<del></del>			· · <del>- · · · · · ·</del>		<del></del>
	<del></del>							



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
RECOVERY WELL SAMPLING
INORGANIC ANALYSES DATA

Samples Collected 4/26/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were fair. Much of the data was qualified as estimated. In addition, several positive sample results were rejected due to blank contamination. All unqualified sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Inorganic Data Validation

for

#### Environmental Project Control, Inc.

#### Samples Collected 4/26/91

#### Case Narrative

This group contained three recovery well samples including one field blank to be analyzed for total and dissolved metals.

Samples validated in this report are noted below:

Client ID	<u>Lab_ID</u>	Date of Collection
RW1-6F(Dis)	2965	4/26/91
RW1-6T	2957	4/26/91
RW7-10F(Dis)	2958	4/26/91
RW7-10T	2959	4/26/91
RW7-10FB	2960	4/26/91
RW7-10FB(Dis)	2960	4/26/91

Sample numbers distinguished between the total and dissolved results with a "T" (total) or "F" (filtered). Dissolved results were also indicated on the Form I's with a note under "Comments."

The areas reviewed during validation are listed below.



#### CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
- XII. Other QC
- XIII. Overall Assessment

#### Data Validation



#### I. Holding Times

All metals analyses were conducted within acceptable holding times.

#### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected above 20 ppb in any sample (including the matrix spike), data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm$  20% of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for cadmium, chromium, and silver were estimated.

#### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

The preparation blank contained vanadium (-5.0) below its negative IDL and antimony (1.10) greater than its IPL.

Continuing calibration blank for antimony (1.0 ppb) and zinc (3.0 ppb) were greater than the IDLs.

The field blank for dissolved metals contained zinc (12 ppb). The field blank for total metals contained calcium (490 ppb), iron (172 ppb), manganese (5 ppb), sodium (618 ppb), and zinc (42 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Zinc and antimony results were qualified as less than the reported values (U). Calcium, iron, manganese, and sodium results (total metals) were qualified as less than the reported values (U).



Because of the negative blank values reported for vanadium, detection limits were raised. All vanadium detection limits were raised to 9.2 U.

#### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

#### V. Matrix Spike Sample Analysis

Matrix spike analyses for dissolved metals were satisfactory except for arsenic (64.5% recovery), barium (53.2% recovery), iron (128% recovery), and selenium (74% recovery). Positive results for the above analytes were qualified as estimated (J). Detection limits for dissolved arsenic, barium, and selenium were qualified as estimated (UJ).

Matrix spike analyses for total metals were satisfactory except for barium (54.3% recovery), lead (51.5% recovery), manganese (131.8% recovery), selenium (62% recovery), and thallium (64.8% recovery). All positive results for the above analytes were qualified as estimated (J). Detection limits for barium, lead, selenium, and thallium were estimated (UJ).

#### VI. Duplicate Sample Analysis

Duplicate analyses for dissolved metals were satisfactory with the exception of zinc which had a RPD of 75.3. Zinc results for dissolved metals were estimated (J).

Duplicate analyses for total metals were satisfactory with the exception of copper (RPD 127), iron (RPD 78.9), lead (RPD 39.5), manganese (RPD 106.4), sodium (RPD 23.2), and zinc (48.4 RPD). Positive total metals results for copper, iron, lead, manganese, sodium, and zinc were qualified as estimated.

#### VII. Laboratory Control Sample Analyses

Laboratory control sample results were satisfactory.

#### VIII. Furnace Atomic Absorption Analysis

Duplicate injections were performed for all samples and agreed within +20%.



The method of standard additions was conducted for RW7-10FB (lead). Results were satisfactory.

# IX. ICP Serial Dilution Analysis

Serial dilutions were conducted on RW7-10. All results met the validation criteria of 15% with the exception of calcium (22.7% D), iron (86.1% D), and magnesium (23.8% D). Positive results and detection limits for the analytes were estimated.

## X. Detection Limits

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

# XI. Sample Result Verification

Sample results were acceptable as qualified.

# XII. Other QC

Samples were analyzed for total and dissolved metals. In some instances, the dissolved result was higher than the total result by more than experimental error. These data were qualified for both total and dissolved metals as indicated below:

<u>Sample</u>	<u>Analyte</u>	Dissolved	<u>Total</u>	<u>Action</u>
RW1-6	As	7.1	2.8	R
	K	5860	5150	J
	Na	33100	29200	J

### XIII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm$  20% of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for cadmium, chromium, and silver were estimated.



The field blank for dissolved metals contained zinc (12 ppb). The field blank for total metals contained calcium (490 ppb), iron (172 ppb), manganese (5 ppb), sodium (618 ppb), and zinc (42 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Zinc and antimony results were qualified as less than the reported values (U), as were calcium, iron, manganese, and sodium results (total metals).

Because of the negative blank values reported for vanadium, detection limits were raised. All vanadium detection limits were raised to 9.2 U.

Matrix spike analyses for dissolved metals were satisfactory except for arsenic (64.5% recovery), barium (53.2% recovery), iron (128% recovery), and selenium (74% recovery). Positive

results for the above analytes were qualified as estimated (J). Detection limits for dissolved arsenic, barium, and selenium were qualified as estimated (UJ).

Matrix spike analyses for total metals were satisfactory except for barium (54.3% recovery), lead (51.5% recovery), manganese (131.8% recovery), selenium (62% recovery), and thallium (64.8% recovery). All positive results for the above analytes were qualified as estimated (J). Detection limits for barium, lead, selenium, and thallium were estimated (UJ).

Duplicate analyses for dissolved metals were satisfactory with the exception of zinc which had a RPD of 75.3. Zinc results for dissolved metals were estimated (J).

Duplicate analyses for total metals were satisfactory with the exception of copper (RPD 127), iron (RPD 78.9), lead (RPD 39.5), manganese (RPD 106.4), sodium (RPD 23.2), and zinc (48.4 RPD). Positive total metals results for copper, iron, lead, manganese, sodium, and zinc were qualified as estimated.

Samples were analyzed for total and dissolved metals. In some instances, the dissolved result was higher than the total result by more than experimental error. These data were qualified for both total and dissolved metals as indicated below:

<u>Sample</u>	<u>Analyte</u>	Dissolved	<u>Total</u>	<u>Action</u>
RW1-6	As	7.1	2.8	J
	K	5860	5150	J
	Na	33100	29200	J

# 1 INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO

ab Name: 2	PACE_INCORPORAT	ED	Contract: E	0001 PC	8 RW1-6F
Lab Code:	Ca	se No.:	SAS No.	:	SDG No.: RW7-10
trix (so	il/water): WATE	R		Lab Samp	ole ID: 2956.8
revel (low)	med): LOW_	_		Date Rec	eived: 04/27/91
δ Solids:		0			
	Concentration	Units (ug/	/L or mg/kg dry	y weight)	: UG/L_
	CAS No.	Analyte	Concentration	C Q	М
	7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0	Aluminum_ Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Calcium_ Chromium_ Cobalt_ Copper_ Iron_ Lead_ Magnesium Manganese Mercury_ Nickel_ Potassium Selenium_ Silver_ Sodium_ Thallium_ Vanadium_ Zinc_ Cyanide		U	
olor Befor	e: COLORLESS	Clarit	y Before: CLEA	R_	Texture:
or After	: COLORLESS	Clarit	y After: CLEA	R_	Artifacts:
omments: THIS_SAM	PLE_WAS_ANALYZE	D_AS_A_DIS	SOLVED_METAL		

# 1 INORGANIC ANALYSES DATA SHEET

ELA	SAMPLE	NO

ab Name: PACE	_incorporat	ED	Contract: E	PC_	0001	<b>9</b> 	RW1-6T
Lab Code:	Ca	se No.:	SAS No.	: _		Si	DG No.: RW7-10
itrix (soil/wa	ater): WATE	R		La	b Samp	le :	ID: 2957.6
revel (low/med)	: LOW_	_		Da	te Rece	eive	ed: 04/27/91
5 Solids:		0					
Cor	ncentration	Units (ug	/L or mg/kg dr	y w	eight)	: U(	G/L_
	CAS No.	Analyte	Concentration	С	Q	М	
	7440-36-0 7440-38-2 7440-39-3			ł 1·	-N	P   F   P	コレト
t	7440-41-7	Beryllium	1.1	U		P	

Cadmium

Calcium

Zinc

Cyanide

7440-43-9

7440-70-2

7440-66-6

7440-47-3 Chromium 12.0\_ P\_ ប៊ P\_ 7440-48-4 Cobalt 6.4\_ 7440-50-8 Copper 4.5 U P P\_ 7439-89-6 3470 -E\* Iron यदादात F Lead 7439-92-1 1.1\_ P\_ P\_ 10400\_ 7439-95-4 Magnesium 1040\_ 7439-96-5 Manganese EN \* Ū c⊽ 7439-97-6 Mercury\_ 0.20 P\_ P\_ Ø 7440-02-0 Nickel 10 40149 7440-09-7 Potassium 5150\_ F Ū WM. 7782-49-2 Selenium 0.50 8.1\_ P 7440-22-4 Silver U P 7440-23-5 Sodium 29200 Ū F 7440-28-0 Thallium 0.70 Vanadium  $_{\mathtt{P}}^{-}$ 7440-62-2 U 4.2

3.0\_U

38800

33.0

P\_

P

NR

u

olor	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
.or	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
ommen	its:						
							<del></del>

# 1 INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.

ab Name: PACE\_INCORPORATED\_\_\_\_ Contract: EPC\_\_\_\_\_

Lab Code: \_\_\_\_ SAS No.: \_\_\_ SDG No.: RW7-10

atrix (soil/water): WATER Lab Sample ID: 2958.4\_\_\_\_

Tevel (low/med): LOW\_\_ Date Received: 04/27/91

3 Solids: \_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

	<del></del>				<del></del> .
CAS No.	Analyte	Concentration	С	Q	м
7429-90-5	Aluminum	195	ប៊		P
7440-36-0	Antimony	0.90	B		F
7440-38-2	Arsenic	1.0	U	-WW-	F
7440-39-3	Barium	26.0	B		P 3
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.0	Ū		P- 1
7440-70-2	Calcium	40900	ľ	- <del>2</del> -	P-13
7440-47-3	Chromium	9.5	ีบิ		PR
7440-48-4	Cobalt	6.4	บ		1p-12
7440-50-8	Copper	4.5	U		P
7439-89-6	Iron	1540		W-	P 3
7439-92-1	Lead	0.50	บิ		F-
7439-95-4	Magnesium	7520		<del></del>	PT
7439-96-5	Manganese	570	-	E	P-1
7439-97-6	Mercury	0.20	ប៊		cv
7440-02-0	Nickel	8.6	U		P
7440-09-7	Potassium	8840	Ĭ.	<del></del>	P-
7782-49-2	Selenium	0.50	ប៊	-WM	$ \mathbf{F}^- _{\mathcal{J}}$
7440-22-4	Silver	8.1	บ		P_ 7
7440-23-5	Sodium	38000			P- 3
7440-28-0	Thallium	0.70	ប៊	<del></del>	FT
7440-62-2	Vanadium	4.2	U	``	<sub>2</sub> -ν
7440-66-6	Zinc	24.0	٦	-+	P-u
1,140,000	Cyanide		-		NR NR
}	cyamide		-		1111
I <del></del>	! ———— !		_1		!

olor E	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:
or A	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:
Omment THIS		WAS_ANALYZED_AS	S_A_DISSO	DLVED_MET	FAL	

# INORGANIC ANALYSES DATA SHEET 00021

EFA SAMPLE NO.

			•	(	) U U Z I	RW7-10T
ab Name: PAC	E_INCORPORAT	red	Contract: E	PC		
ab Code:	Ca	se No.:	SAS No.	<b>:</b> .		SDG No.: RW7-1
atrix (soil/	water): WATE	ER		L	ab Samp	le ID: 2959.2
evel (low/me	d): LOW_	_		D	ate Rec	eived: 04/27/91
Solids:		.0		-		
C	oncentration	Units (ug,	/L or mg/kg dry	y 1	weight)	: UG/L_
	CAS No.	Analyte	Concentration	С	Q	М
	7420 00 5	77.000	226	_	l <del></del> -	=
	7429-90-5		216_	=	<del></del>	P_
	7440-36-0	Antimony_ Arsenic	1.0		<del></del>	F_U
	7440-38-2	Barium	1.0	U B		<del>                                    </del>
	7440-39-3	Beryllium	24.0_	U		P_ 7
	7440-41-7	Cadmium	1.1	Ü		P_ P_ 5
	7440-70-2	Calcium	40300	U	-E	P_ 5
	7440-70-2	Chromium Chromium		ប៊	E	
	7440-47-3	Cobalt	9.5 <sub>-</sub>	U		P_ P_
				١	*	15-k
	7440-50-8	Copper	36.0	-	E*	P P P P P
	7439-89-6	Iron	12500_	-	SN*	F   2
	7439-92-1 7439-95-4	Magnesium	12.4_ 7390	-	_311 ~	15-17
	7439-95-4	Manganese	831_	-	EN*	5-17
	7439-97-6	Mercury_		ਹ		cv
	7440-02-0	Nickel		U	<del></del>	P_
	7440-09-7	Potassium	8640	٦		P
	7782-49-2	Selenium		<del></del>	MM_	F 5
	7440-22-4	Silver_		U		P_ 5
	7440-23-5	Sodium	39500	٦	-X-	P_ 3
	7440-28-0	Thallium		וּט	WN-	
	7440-28-0	Vanadium		ט	m	F_J P
	7440-66-6	Zinc	77.0	۲	<del></del>	
	7440 00 0	Cyanide		-		P_ U NR
				_		
olor Before:	COLORLESS	Clarit	y Before: CLEA	R_	-	Texture:
or After:	LT_YELLOW	Clarit	y After: CLEA	R_	•	Artifacts:
mments:						

# 1 INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.

b Name: PACE_INCOR	PORATED	00022 Contract: EPC	KW/-TOLD
.ab Code:	Case No.:	SAS No.:	SDG No.: RW7-10
<pre>trix (soil/water):</pre>	WATER	Lab Sample	ID: 2960.6
evel (low/med):	LOW	Date Recei	ived: 04/27/91

Solids: \_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

	,	<del></del>		·			
	CAS No.	Analyte	Concentration	c	Q	М	
	7429-90-5	Aluminum	195	Ū		P	
	7440-36-0	Antimony	0.80	U		F	
	7440-38-2	Arsenic	1.0	U		F	
	7440-39-3	Barium	12.5	U		P	15
	7440-41-7	Beryllium	1.1	ט	J	P	1
	7440-43-9	Cadmium	3.0	U		P	15
	7440-70-2	Calcium	490	В	<del></del>	P	F
	7440-47-3	Chromium	9.5	U		P	15
	7440-48-4	Cobalt	6.4	U		P_	-
	7440-50-8	Copper	4.5	U		P_	
	7439-89-6	Iron	172	)		P	15
	7439-92-1	Lead	0.50	Ū		F	1.5
	7439-95-4	Magnesium	509	U		P	7
	7439-96-5	Manganese	5.0	B		P	1
	7439-97-6	Mercury	0.20	U		cv	
	7440-02-0	Nickel	8.6	U		P	
	7440-09-7	Potassium	760	U		P	1
	7782-49-2	Selenium_	0.50	U	₩-	F	5
	7440-22-4	Silver	8.1	U		P	5
	7440-23-5	Sodium	618	Ð		P	3
į	7440-28-0	Thallium_	0.70	U		F	1
į	7440-62-2	Vanadium_	4.2	U		P	
	7440-66-6	Zinc	42.0			P	15
		Cyanide	<del></del>	_		NR	
							1

tor	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
, or	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
mmer	nts:						
							<del></del> -

# INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

	THOUGHITC WI	ALISES DATA SHEET	
		00023	RW7-10FB
ab Name: PACE_INCOR	PORATED	Contract: EPC	
Lab Code:	Case No.:	SAS No.:	SDG No.: RW7-10
<pre>atrix (soil/water):</pre>	WATER	Lab Sample	e ID: 2960.6
revel (low/med):	LOW	Date Rece	ived: 04/27/91
Solids:	0		

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

	CAS No.	Analyte	Concentration	С	Q	М	
	7429-90-5	Aluminum	195	Ū		P	
	7440-36-0	Antimony_	0.80	ט		F	1
	7440-38-2	Arsenic	1.0	U		F	4
	7440-39-3	Barium	12.5	U		P	J-
	7440-41-7	Beryllium	1.1	ַ		P	
	7440-43-9	Cadmium	3.0	U		P_	1
	7440-70-2	Calcium	448	บ		P	7
	7440-47-3	Chromium	9.5	U		P	15
	7440-48-4	Cobalt	6.4	U		P	
	7440-50-8	Copper	4.5	ָּט		P	
	7439-89-6	Iron	97.7	U		P	15
	7439-92-1	Lead	0.50	บ		F	-
	7439-95-4	Magnesium	509	U		P	15
	7439-96-5	Manganese	1.5	U		P	-
	7439-97-6	Mercury_	0.20	U		CV	l
	7440-02-0	Nickel	8.6	U		P	
	7440-09-7	Potassium	760	บ		P	
	7782-49-2	Selenium	0.50	U		F	1
	7440-22-4	Silver	8.1	U		P	17
	7440-23-5	Sodium	390	U		P	~
	7440-28-0	Thallium	0.70	U		E	
	7440-62-2	Vanadium	4.2	ט	<del></del>	P_	}
	7440-66-6	Zinc		B		P	1
ĺ	<u> </u>	Cyanide_		_ [		NR	~
				-			

olor Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	_
or After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
omments: THIS_SAMPLE	_WAS_ANLAYZED_A:	S_A_DISSO	OLVED_ME	FAL.		

EFA	SAMPLE	NO

INORGANIC ANALYSES DATA SHEET

00018

ab Name: PAC	E_INCORPORAT	ED	Contract: EI	PC_		RW1-6F
ab Code:	Ca	se No.:	SAS No.:	: _		SDG No.: RW7-
atrix (soil/v	water): WATE	R		La	ab Samp	le ID: 2956.8
evel (low/med	i): LOW_	_		Da	ate Rec	eived: 04/27/91
Solids:		0				
Co	oncentration	Units (ug,	/L or mg/kg dry	7 1	weight)	: UG/L_
	CAS No.	Analyte	Concentration	С	Q	м
	7429-90-5	Aluminum	195	Ū	· — —	P
	7440-36-0	Antimony	0.80	U		P
	7440-38-2	Arsenic	1.1	B	-N	1 <del>-</del> 1 .
	7440-39-3	Barium	31.0	В	<del></del>	F_ J
	7440-41-7	Beryllium	1.1	U		{ P{}}
	7440-43-9	Cadmium	3.0	U		P   J
	7440-70-2	Calcium_	36900	_	2	P_ J
	7440-47-3	Chromium_	<del>    </del>	ប៊		P_IJ
	ì	Cobalt		U		P_
	7440-50-8	Copper	(	U		P_
	7439-89-6	Iron	390_	_	}\	P_ 5
		Lead	0.50_	ับ		F_
		Magnesium	10100_	-		P_ 5
		Manganese	1010_	ਹ	E	P CV
	7439-97-6	Mercury	0.20_	- 1		C∇
	1	Nickel	8.6	U		P_ J
	1	Potassium Selenium	5860_ 0.50_	ับ	-14-	P_ J
		Silver	8.1	ט		FP P P P P P P P P P P P P P P P P P P
		Sodium	33100	٦		P_ J P_ J
	7440-28-0	Thallium		บี	<del></del>	12-12
	7440-62-2	Vanadium		U	-""-	F_ 5
	7440-66-6	Zinc	44.0	٦,		P_ U
	1	Cyanide	<u> </u>	-		NR
lor Before:	COLORLESS	Clarit	y Before: CLEA	R_	-	Texture:
lor After:	COLORLESS	Clarit	y After: CLEA	R_	-	Artifacts:
mments: THIS_SAMPLE	C_WAS_ANALYZI	ED_AS_A_DIS	SSOLVED_METAL			

# 1 INORGANIC ANALYSES DATA SHEET

E. A	SAMPLE	NO.

 	~		. —		
		0001	þ	RW1-6T	

.ab Name: PACE_	INCORPORAT	ED	Contract: E	PC_		]_	R	MT-0.	
Lab Code:	_ Ca	se No.:	SAS No.	: _		S	DG N	lo.: 1	RW7-10
atrix (soil/wa	ter): WATE	R		La	ab Sampi	le	ID:	2957	. 6
Tevel (low/med)	: LOW_	_		Da	ate Rece	eiv.	ed:	04/2	7/91
. Solids:		0							
Con	centration	Units (ug/	L or mg/kg dry	y v	weight):	<b>.</b> U	G/L_	-	
							1		
ļ	CAS No.	Analyte	Concentration		Q	М			
]	7429-90-5	Aluminum	1760	-		P			
	7440-36-0	Antimony_	1.1	B		P_F	lu		
1	7440-38-2	Arsenic	2.8	B	-	F_	5		
	7440-39-3	Barium		B	_ <del>1</del> _4_	P_	5		
	7440-41-7	Beryllium	1.1	ט		P_	~		
	7440-43-9	Cadmium_	3.0	ט			$ \tau $		
	7440-70-2	Calcium	38800	_	- <del>E</del> -	P_ P_	7		
	7440-47-3	Chromium	12.0			P	5		
	7440-48-4	Cobalt	6.4	<del> </del>		$P_{-}$			
	7440-50-8	Copper	4.5	ט	-x-	P_	Ì.,		
	7439-89-6	Iron	3470	_	_ <del>E</del> *-	P_	J		
	7439-92-1	Lead	1.1	₽	<del>\*-</del>	F_ P_	नित्त		
	7439-95-4	Magnesium	10400	_		P_	5		
1	7439-96-5	Manganese	1040_	_	_ <del>EN*_</del> _	P_	12		
	7439-97-6	Mercury	0.20_			c⊽			
4	7440-02-0	Nickel	10	B		P_	_		
	7440-09-7	Potassium	5150_	$ \_ $		P_	J		
	7782-49-2	Selenium_	0.50_	U	<del>MM</del>	F_	5		
1	7440-22-4	Silver	8.1_	บ		P_	त्तर		
i i	7440-23-5	Sodium	29200_	_		P_	7		
	7440-28-0	Thallium_	0.70_	ប		$F_{-}$	5		
	7440-62-2	Vanadium_	4.2_	U		P_			
] '	7440-66-6	Zinc	33.0_	_	_*_	P_	U		
		Cyanide		_		NR			

lor Before:	COLORLESS	Clarity Before	: CLEAR_	Texture:
lor After:	COLORLESS	Clarity After:	CLEAR_	Artifacts:
omments:				

# 1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Lab Name: PACI	E_INCORPORAT	ED	0 ( Contract: E	020 PC	RW7-10F
Lab Code:				:	SDG No.: RW7-10
fatrix (soil/w	vater): WATE	R		Lab Sampl	le ID: 2958.4
Level (low/med	l): LOW_	-		Date Rece	eived: 04/27/91
€ Solids:		0			
Co	ncentration	Units (ug,	/L or mg/kg dry	y weight):	: UG/L_
	CAS No.	Analyte	Concentration	C Q	м
	7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-95-4 7439-95-4 7439-95-4 7439-97-6 7440-02-0	Aluminum_ Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Calcium_ Chromium_ Cobalt_ Copper_ Iron_ Lead_ Magnesium Manganese Mercury_ Nickel_ Potassium	3.0 40900 9.5 6.4 4.5 1540 0.50 7520 570 0.20 8.6	U	
	7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6	Selenium_ Silver_ Sodium_ Thallium_ Vanadium_ Zinc_ Cyanide_	8840 0.50 8.1 38000 0.70 4.2 24.0	U	F
color Before:	COLORLESS	Clarit	y Before: CLEA	AR_	Texture:
olor After:	COLORLESS	Clarit	y After: CLEA	AR_	Artifacts:
Comments: THIS_SAMPLE	_WAS_ANALYZI	ED_AS_A_DIS	SSOLVED_METAL		

EFA SAMPLE NO.

	_			
INORGANIC	ANALYSES	DATA	SHEET	

DW7	_	1	$\Delta m$	

				-	0021		RW7-	10T
ab Name: PAC	E_INCORPORAT	'ED	Contract: El	PC_		ـــا		
ab Code:	Ca	se No.:	SAS No.	: _		S	DG No.:	RW7-10
atrix (soil/	water): WATE	R		La	b Samp	le :	ID: 295	9.2
vel (low/med	i): LOW_	_		Da	te Rec	eiv	ed: 04/	27/91
Solids:		0						
Co	oncentration	Units (ug	/L or mg/kg dry	y w	reight)	: U	G/L_	
	CAS No.	Analyte	Concentration	С	Q	м		
		\ <u></u>		_		-		
	7429-90-5	Aluminum_	216_	_		P_	<u> </u>	
	7440-36-0	Antimony_	1.0_	₽			u	
	7440-38-2	Arsenic	1.0_	וש		F_	1_	
	7440-39-3	Barium	24.0_	В	<del></del> }	P_	5	
	7440-41-7	Beryllium	1.1_	ען		P_P	-	
	7440-43-9	Cadmium	3.0_	ן ט		P_	44	
	7440-70-2	Calcium	40300_	_	_E	P_	2	
	7440-47-3	Chromium_	9.5	U		P_	ľ	
	7440-48-4	Cobalt	6.4	ןטן		P_	_	
	7440-50-8	Copper	36.0	_		P_	<u> </u>	
	7439-89-6	Iron	12500_	_	<del>E</del> *_	P_	17	
	7439-92-1	Lead	12.4_	_	_SN*	P P P P P P P P P P P P P P P P P P P	[ <del>]</del> .	
	7439-95-4	Magnesium	7390_	1_1		P_	13	
	7439-96-5	Manganese	831_	1_1	_EN*	P_	12	
	7439-97-6	Mercury	0.20_	U		CV	}	
	7440-02-0	Nickel	8.6_	U		P_ P_	<b>,</b>	
	7440-09-7	Potassium	8640	l_i		P_	<b>-</b>	
	7782-49-2	Selenium_	0.50	ט	W1	F_	5	
	7440-22-4	Silver	8.1	ן ט		P_ P_	2	
	7440-23-5	Sodium	39500	i i	-X	P	3	
	7440-28-0	Thallium		ן ט	<del>-</del>		D D	
	7440-62-2	Vanadium	4.2	ט		F_ P	1	
	7440-66-6	Zinc	77.0		*	P_	lu	
		Cyanide		-1		NR		
						<b> </b>		
lor Before:	COLORLESS	Clarit	y Before: CLEA	AR_		Te	xture:	
lor After:	LT_YELLOW	Clarit	y After: CLEA	AR_		Art	tifacts	:
	<del></del>							



		INORGANIC	MADISES DATA		_
				0002	2   RW7-10FB
ab Name: PAC	E_INCORPORAT	ED	Contract: El	PC	
Lab Code:	Ca	se No.:	SAS No.		SDG No.: RW7-10
atrix (soil/	water): WATE	R		Lab Samp	le ID: 2960.6
evel (low/med	d): LOW_	_		Date Rec	eived: 04/27/91
Solids:		0			
C	oncentration	Units (ug,	/L or mg/kg dry	y weight)	: UG/L_
	1	T			T
	CAS No.	Analyte	Concentration	C Q	М
	7429-90-5	Aluminum	195	<del> </del>	P_
	7440-36-0	Antimony_	0.80	<u>u</u>	F
	7440-38-2	Arsenic	1.0	יט –	F_
	7440-39-3	Barium	12.5	ŭ	P_ 5
	7440-41-7	Beryllium	1.1	<u>"</u>	P_ 3
	7440-43-9	Cadmium	3.0	<u>u</u>	
	7440-70-2	Calcium		B1	P 7 P 7
	7440-47-3	Chromium	9.5	<u></u>	P_ 5
	7440-48-4	Cobalt		<u></u>	P
	7440-50-8	Copper		ט	P_
	7439-89-6	Iron	172		P_ 5
<b>)</b>	7439-92-1	Lead	0.50	<u></u>	FT
	7439-95-4	Magnesium		ט	P 5 5 P 5 P 5 P 5 P 5 P 5 P 5 P 5 P 5 P
	7439-96-5	Manganese		B	P 3
	7439-97-6	Mercury		ט –	$ c\overline{v} ^2$
	7440-02-0	Nickel		U	
	7440-09-7	Potassium	760	<u>u</u>	P_ P_
	7782-49-2	Selenium		U W-	F_   S
	7440-22-4	Silver		ט — —	
	7440-23-5	Sodium		- <del>D</del>	P 3
	7440-28-0	Thallium		บ	
	7440-62-2	<del>-</del> 1		ט –	F J
	7440-66-6	Zinc	42.0		P_J
		Cyanide			NR
Color Before:	COLORLESS	Clarit	y Before: CLE	AR_	Texture:
lor After:	COLORLESS	Clarit	y After: CLEA	AR_	Artifacts:
omments:					
					<del></del>
<del></del>					<del></del>

# INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.

00023	RW7-10FB

Lah Name: PAC	E INCORPORAT	ED	Contract: E	00023 PC	RW7-10FB
					.
Lab Code:	Ca	se No.:	SAS No.	:	SDG No.: RW7-10
<pre>fatrix (soil/)</pre>	water): WATE	R		Lab Samp	ole ID: 2960.6
Level (low/med	_WOJ :(E	_		Date Rec	eived: 04/27/91
<pre>% Solids:</pre>		O			
Co	oncentration	Units (ug	/L or mg/kg dr	y weight)	: UG/L_
	CAS No.	Analyte	Concentration	C Q	M
	7429-90-5	Aluminum	195		
	7440-36-0	Antimony_		ט	F
	7440-38-2	Arsenic	1.0	ַ ע	F_ J
	7440-39-3	Barium	12.5	บ	ID IT
	7440-41-7			[ען	P
	7440-43-9	Cadmium	3.0_	שן	
	7440-70-2	Calcium_	448_		P_ 5
	7440-47-3	Chromium_	9.5		P_ 5
	7440-48-4	Cobalt	6.4_		.   P
	7440-50-8	Copper	4.5	U	P
	7439-89-6	Iron	97.7	<u>u</u>	P_ J
	7439-92-1	Lead	0.50		<del>                                    </del>
	7439-95-4	Magnesium			P_ J
	7439-96-5	Manganese		<u> </u>	P
	7439-97-6	Mercury	0.20_	U	CV
	7440-02-0	Nickel	8.6	U	P_ P_
	7440-09-7	Potassium	760_		
	7782-49-2	Selenium_	0.50_	<u>u</u>	15-17
	7440-22-4	Silver	8.1	<u>ש</u>	P_   J   P_   J   P_     P_
	7440-23-5 7440-28-0	Thallium	390_	u	P F P
	7440-28-0	Vanadium_		ט	F -
	7440-62-2	Zinc	4.2_ 12.0_	<b>B</b>	
	7440 00 0	Cyanide		·	NR J
color Before:	COLORLESS	Clarit	cy Before: CLE	LR_	Texture:
olor After:	COLORLESS	Clarit	y After: CLEA	AR_	Artifacts:
Comments: THIS_SAMPLE	:_WAS_ANLAYZ	ED_AS_A_DIS	SSOLVED_METAL		



# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

AREAL SAMPLING

VOLATILES ANALYSES DATA

Samples Collected 04/29/91

Chemical Analyses Performed By PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233

### EXECUTIVE SUMMARY



Trichloroethene, tetrachloroethene, acetone, 1,1-dichloroethane, total 1,2-dichloroethene and acetone are the only valid target compound detected. Acetone and toluene are common laboratory contaminants. These compounds were not detected in the associated method blanks but are probably attributable to the analytical system. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable. (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Data Validation for Environmental Project Control, Inc.

Samples Collected April 29, 1991

Volatiles Analyses Data

## Case Narrative

One groundwater system sample was collected April 29, 1991 and submitted to Pace, Inc. April 30, 1991. The laboratory was requested to perform purgeable volatile target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the more volatile compounds.

Trichloroethene, tetrachloroethene, acetone, 1,1-dichloroethane, total 1,2-dichloroethene and acetone are the only valid target compounds detected. Acetone and toluene are common laboratory contaminants. These compounds were not detected in the associated method blanks but are probably attributable to the analytical system. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

The sample included in this Sample Delivery Group (SDG) is:

<u>Lab ID</u>	Client ID	<pre>Date of Collection</pre>
2977	AUG12-2	04/29/91

The areas reviewed during validation are listed below.



# ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment of Data for a Case



## DATA VALIDATION

# I. Sample Holding Times

All samples were analyzed within holding time.

## II. Instrument Performance

Inst. J met bromofluorobenzene (BFB) ion abundance criteria on 04/24/91 1158, 05/05/91 1034, 05/05/91 2110, and 05/06/91 0934.

### III. Calibration

The areas for some internal standards and target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. Sample data were not affected.

# Initial Calibration 04/24/91 Inst J

The associated samples are AUG12-2, AUG12-2RE, AUG12-2MS, and AUG12-2MSD.

All compounds met the 0.10 response factor criteria established for this project.

Response factors and percent relative standard deviation (%RSD) for trans 1,3-dichloropropene cannot be calculated from the quantitation reports. This compound was not detected but the non-detects in the associated samples have been qualified as estimates.

The following compounds failed to meet %RSD criteria:

2-butanone (34%) 1,1,1-trichloroethane (75%) carbon tetrachloride (86%)

These compounds were not detected but the non-detects were qualified as estimates.

# Continuing Calibration 05/05/91 1108 Inst. J

The associated sample is AUG12-2.



All compounds met the 0.10 relative response factor criteria established for the project.

The following compounds failed to meet the 25% difference (D) criteria:

2-butanone (26%) carbon tetrachloride (81%)

These compounds were not detected and non-detect for carbon tetrachloride was previously qualified as an estimate. No other data were qualified.

## Continuing Calibration 05/05/91 2144 Inst. J

The associated sample is AUG12-2RE.

Carbon tetrachloride failed to meet the 0.10 minimum RRF criteria. This compound was not detected but the non-detect has been rejected in the associated sample.

Carbon tetrachloride at 82% failed to meet the 25% difference criteria. The non-detect for this compound was previously rejected.

# Continuing Calibration 05/06/91 1010 Inst. J

The associated samples are AUG12-2MS and AUG12-2MSD.

Carbon tetrachloride failed to meet the 0.10 minimum RRF criteria. This compound was not detected but the non-detects in the associated samples were rejected.

Carbon tetrachloride at 81% failed to meet the 25% difference criteria. The non-detects in the associated samples were previously rejected.

# IV. Blanks

Methylene chloride and 4-methyl-2-pentanone detected in VBK01.

Methylene chloride was detected in VBLK02 and VBLK03.

The concentrations of methylene chloride in the blanks was sufficient to qualify all methylene chloride results in the associated samples as less than the reported values.

4-Methyl-2-pentanone was not detected in the sample analyses.



## V. Surrogate Recovery

All surrogate recoveries were within control limits.

# VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike recoveries are within the established QC limits. The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits.

# VII. Field Quality Control Samples

No field quality control samples were submitted with this sample.

## VIII. Internal Standards Performance

All retention times (RT) and internal standard (IS) areas are acceptable.

# IX. TCL Compound Identification

Compound identifications are acceptable.

# X. Compound Quantitation and Reported Detection Limits

Sample AUG12-2 had to be reanalyzed at a dilution to bring the concentration of tetrachloroethene within the calibration range of the instrument. The concentration of tetrachloroethene reported in AUG12-2 was rejected; the concentration reported in the rerun was acceptable.

All other results and detection limit quantitations are acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were detected.

# XII. System Performance

System performance is acceptable.



# XIII. Overall Assessment of Data for a Case

Trichloroethene, tetrachloroethene, acetone, 1,1-dichloroethane, total 1,2-dichloroethene and acetone are the only valid target compound detected. Acetone and toluene are common laboratory contaminants. These compounds were not detected in the associated method blanks but are probably attributable to the analytical system. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

# 1A VOLA'1 LE ORGANICS ANALYSIS DATA SHEET

AUG12-20 () 0 2 1

Lab Name: PACE

Contract:

ab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 2977.0

ample wt/vol:

5. (g/mL) ML

Lab File ID: J2450

Level: (low/med) LOW

Date Received: 4/30/91

Moisture: not dec.100.

Date Analyzed: 5/5/91

♪ Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND

(ug/L or ug/Kg) UG/L

74-87-3Chloromethane       10. U         74-83-9Bromomethane       10. U         75-01-4Vinyl Chloride       10. U         75-00-3Chloroethane       10. U         75-09-2Methylene Chloride       31. BU         67-64-1Acetone       100.         75-15-0Carbon Disulfide       5. U         75-35-41,1-Dichloroethane       5. U         75-34-31,1-Dichloroethane       8.         540-59-01,2-Dichloroethane       5. U         67-66-3Chloroform       5. U         107-06-21,2-Dichloroethane       5. U         78-93-32-Butanone       10. U         71-55-61,1,1-Trichloroethane       5. UJ         56-23-5Carbon Tetrachloride       5. UJ         108-05-4Vinyl Acetate       10. U         75-27-4Bromodichloromethane       5. U         78-87-51,2-Dichloropropane       5. U         10061-01-5cis-1,3-Dichloropropene       5. U         79-01-6Trichloroethane       5. U         79-01-6Trichloroethane       5. U         71-43-2Benzene       5. U         10061-02-6	
74-83-9Bromomethane       10. U         75-01-4Vinyl Chloride       10. U         75-00-3Chloroethane       10. U         75-09-2Methylene Chloride       31. BW         67-64-1Acetone       100.         75-15-0Carbon Disulfide       5. U         75-35-41,1-Dichloroethene       8.         540-59-01,2-Dichloroethane       8.         540-59-01,2-Dichloroethane       5. U         107-06-21,2-Dichloroethane       5. U         78-93-32-Butanone       10. U         71-55-61,1,1-Trichloroethane       5. UJ         108-05-4Vinyl Acetate       10. U         78-87-51,2-Dichloromethane       5. U         78-87-51,2-Dichloromethane       5. U         79-01-6	
75-01-4Vinyl Chloride	- 1
75-00-3Chloroethane	l
75-09-2Methylene Chloride	- (
100.   75-15-0Carbon Disulfide	- 1
75-15-0	Į.
75-35-41,1-Dichloroethene	1
75-34-31,1-Dichloroethane	<b>}</b>
540-59-01,2-Dichloroethene (total)   25.   67-66-3	i
67-66-3Chloroform   5.   U   107-06-21,2-Dichloroethane   5.   U   78-93-32-Butanone   10.   U   56-23-5Carbon Tetrachloride   5.   U   108-05-4Vinyl Acetate   10.   U   75-27-4Bromodichloromethane   5.   U   1061-01-5cis-1,3-Dichloropropene   5.   U   1061-01-5cis-1,3-Dichloropropene   5.   U   120.   124-48-1Dibromochloromethane   5.   U   120.	1
107-06-21,2-Dichloroethane	İ
78-93-32-Butanone	1
71-55-61,1,1-Trichloroethane   5. UJ   108-05-4Carbon Tetrachloride   5. UJ   108-05-4Vinyl Acetate   10. U   75-27-4Bromodichloromethane   5. U   10. U   10061-01-51,2-Dichloropropane   5. U   10061-01-5Trichloroethene   120.   124-48-1Dibromochloromethane   5. U   120.   124-48-1Dibromochloromethane   5. U   120.   124-43-2Benzene   5. U   120.	
108-05-4Vinyl Acetate	1
108-05-4Vinyl Acetate	1
75-27-4Bromodichloromethane	
78-87-51,2-Dichloropropane       5.       U         10061-01-5cis-1,3-Dichloropropene       5.       U         79-01-6Trichloroethene       120.       120.         124-48-1Dibromochloromethane       5.       U         79-00-51,1,2-Trichloroethane       5.       U         71-43-2Benzene       5.       U         10061-02-6trans-1,3-Dichloropropene       5.       U         75-25-2Bromoform       5.       U         108-10-14-Methyl-2-Pentanone       10.       U         591-78-62-Hexanone       10.       U         127-18-4Tetrachloroethene       50.       F         79-34-51,1,2,2-Tetrachloroethane       5.       U         108-88-3Toluene       2.       J	
10061-01-5cis-1,3-Dichloropropene   79-01-6Trichloroethene   120.   124-48-1Dibromochloromethane   5.   U   79-00-51,1,2-Trichloroethane   5.   U   71-43-2Benzene   5.   U   71-43-2Benzene   5.   U   75-25-2Bromoform   5.   U   75-25-2Bromoform   5.   U   75-25-2Bromoform   5.   U   75-25-2Bromoform   79-34-5Tetrachloroethene   79-34-5Tetrachloroethene   79-34-51,1,2,2-Tetrachloroethane   79-34-5Toluene   79-34-5	
79-01-6Trichloroethene 124-48-1Dibromochloromethane 79-00-51,1,2-Trichloroethane 71-43-2Benzene 10061-02-6trans-1,3-Dichloropropene 75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene	1
124-48-1Dibromochloromethane       5.       U         79-00-51,1,2-Trichloroethane       5.       U         71-43-2Benzene       5.       U         10061-02-6trans-1,3-Dichloropropene       5.       U         75-25-2Bromoform       5.       U         108-10-14-Methyl-2-Pentanone       10.       U         591-78-62-Hexanone       10.       U         127-18-4Tetrachloroethene       50.       F         79-34-51,1,2,2-Tetrachloroethane       5       U         108-88-3Toluene       2.       J	ļ
79-00-51,1,2-Trichloroethane 71-43-2Benzene 10061-02-6trans-1,3-Dichloropropene 75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene 5. U U U 5. U U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U U 5. U U 5. U U U 5. U U U 5. U U U 5. U U U U 5. U U U U U U U U U U U U U U U U U U U	}
71-43-2Benzene 10061-02-6trans-1,3-Dichloropropene 75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 127-18-62-Hexanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene 5. U U U 5. U U U 5. U U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U U 5. U U U 5. U U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U 5. U U	1
10061-02-6trans-1,3-Dichloropropene 75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 127-18-62-Hexanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene 5. U U U 5. U U 2. J	1
75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 591-78-62-Hexanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene 5. U U U 5. U U 2. J	j
108-10-14-Methyl-2-Pentanone 10. U 10	}
591-78-62-Hexanone	1
127-18-4Tetrachloroethene 550 FK 79-34-51,1,2,2-Tetrachloroethane 5 N. U 108-88-3Toluene 2. J	1
79-34-51,1,2,2-Tetrachloroethane 5 M. U 108-88-3Toluene 2. J	,
108-88-3Toluene 2. J	
108-88-3Toluene 2. J	645
	7 21 - 27
108-90-7Chlorobenzene 5. U	1
100-41-4Ethylbenzene 5. U	1
100-42-5Styrene 5. U	1
1330-20-7Xylene(total) 5. U	
* '	

# VOLA' LE ORGANICS ANALYSIS DATA SHEET TENLATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

AUG12-2, 2

ab Name: PACE Contract:

ab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

! itrix: (soil/water) WATER

Lab Sample ID: 2977.0

Sample wt/vol:

5. (g/mL) ML

Lab File ID: J2450

Level: (low/med) LOW

..umber TICs found:

Date Received: 4/30/91

% Moisture: not dec.100.

Date Analyzed: 5/5/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
		-   ======		====
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8				

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# VOLA\_\_LE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

AUG12-2' RE

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 2977.0

ample wt/vol: 5. (g/mL) ML Lab File ID: J2461

Level: (low/med) LOW Date Received: 4/30/91

Moisture: not dec.100. Date Analyzed: 5/ 6/91

Column: (pack/cap) PACK Dilution Factor: 5.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

74-83-9Br 75-01-4Vi	loromethane omomethane nyl Chloride loroethane thylene Chloride	50. 50. 50. 50.	U U
74-83-9Br 75-01-4Vi	omomethane nyl Chloride loroethane	50. 50.	-
75-01-4Vi	nyl Chloride loroethane	<del>-</del> I	Ū
	loroethane	<del>-</del> I	
1 75-00-3Ch	thylene Chloride		U
75-09-2Me	CHATENE CHIOLIDE	86.	Bul
67-64-1Ac	etone	83.	1
75-15-0Ca	rbon Disulfide	25.	ט
75-35-41,	l-Dichloroethene	25.	U
75-34-31,	l-Dichloroethane	25.	U
540-59-01,	2-Dichloroethene (total)	25.	ט
67-66-3Ch	loroform	25.	U
107-06-21,	2-Dichloroethane	25.	U
78-93-32-1	Butanone	50.	U
71-55-61,	l,1-Trichloroethane	25.	บร
56-23-5Car	rbon Tetrachloride	25.	LUR
108-05-4Vir	nyl Acetate	50.	U
75-27-4Bro	omodichloromethane	25.	U
78-87-51.2	2-Dichloropropane	25.	ט
10061-01-5cis	s-1,3-Dichloropropene	25.	ט
79-01-6Tri	chloroethene	110.	<b>,</b>
124-48-1Dib	promochloromethane	25.	ט
79-00-51,1	,2-Trichloroethane	25.	U
71-43-2Ber	nzene	25.	Ū
10061-02-6tra	ns-1,3-Dichloropropene	25.	U
75-25-2Bro	moform	25.	ָט <u>'</u>
108-10-14-N	lethyl-2-Pentanone	50.	U
591-78-62-H	lexanone	50.	ប
127-18-4Tet	rachloroethene	480.	) !
79-34-51,1	,2,2-Tetrachloroethane	25.	ן ט
108-88-3Tol	uene	25.	ן טן
108-90-7Chl	orobenzene	25.	ט
100-41-4Eth	vlbenzene	25.	U
100-42-5Sty	rene	25.	ט
1330-20-7Xyĺ	ene(total)	25.	ט
			l l

# 1E VOLA' LE ORGANICS ANALYSIS DATA SHEET TE...ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

AUG12-2 RE

Contract: ab Name: PACE

Lab Code: PACE Case No.: EPC

SAS No.:

SDG No.:

atrix: (soil/water) WATER

cample wt/vol:

5. (g/mL) ML

Lab File ID: J2461

Level: (low/med) LOW

Date Received: 4/30/91

Lab Sample ID: 2977.0

Moisture: not dec.100.

Date Analyzed: 5/ 6/91

Column: (pack/cap) PACK

Dilution Factor:

5.00

CONCENTRATION UNITS:

Number TICs found:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
3.				
5				
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9.				
11.				
13				
16.				
18.				
20.				
22:				
23				
26.				
28.				
29.				
			1	

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# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 4/30/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. Positive methylene chloride results reported in Samples S1-3, S1-3DUP, and the trip blank were qualified as less than the reported values. Detection limits for aromatic compounds were qualified as estimated. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Case Narrative

Five samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on April 30, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
Trip Blank	3032 3033	04/30/91 04/30/91
S1-3 DUP	3034	04/30/91



## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



# I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimates for all three samples.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

# III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### A. Initial

Initial calibration criteria were met on 4/24/91.

# B. Continuing

Continuing calibration criteria were met on 5/8/91 with the exception of the % difference for 2-butanone (actual 31.7; criteria 25). Data were not affected.

# IV. Blanks

Methylene chloride was reported in the method blank and the trip blank. Methylene chloride results for Samples S1-3 and S1-3 DUP and the trip blank were qualified as less than the reported values.

# V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

# VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-3. Data were within acceptance criteria.

# VII. Field Duplicates



Compounds and concentrations (ug/L) reported in Samples S1-3 and S1-3 DUP were as follows:

Compound	S1-3	S1-3 DUP
Trichloroethene	4	3
Tetrachloroethene	26	24
Acetone	3	

Because acetone was found in only one of the duplicate samples, the value reported for acetone in Sample S1-3 was rejected. Other data were within acceptance criteria.

# VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

# IX. TCL Compound Identification

TCL compound identifications were acceptable.

# X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

# XII. System Performance

System performance requires attention. Manual integrations should be addressed. All samples were analyzed outside the required holding time.

# XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was excellent. Values reported for methylene chloride were qualified as less than the reported values due to laboratory contamination. Detection limits for aromatic compounds were estimated in all samples. The samples were apparently shipped to the laboratory via overnight courier; however, this information is not provided on the chain of custody forms.

# VOL ILE ORGANICS ANALYSIS DATA SHEET

Trip blank : 3032

Lab Name: PACE Contract: ]

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2495

'evel: (low/med) LOW Date Received: 5/ 1/91

% Moisture: not dec.100. Date Analyzed: 5/ 8/91

olumn: (pack/cap) PACk Dilution Factor: 1.00

74-87-3Chloromethane	CAS NO.	COMPOUND		ATION UNITS: ug/Kg/ UG/L		Ω
78-93-32-Butanone	74-87-3 74-83-9 75-01-4 75-00-3 75-09-2 67-64-1 75-15-0 75-35-4 75-34-3 540-59-0	Chloromethane	de		10. 10. 10. 10. 8. 10. 5. 5. 5.	
79-00-51,1,2-Trichloroethane 5. [U   71-43-2Benzene 5. [U   71-43-2Benzene 5. [U   75-25-2Bromoform 5. [U   75-25-2Bromoform 5. [U   75-25-2Bromoform 5. [U   75-25-2Bromoform 70. [U   79-34-6	107-06-2   78-93-3   71-55-6   56-23-5   108-05-4   75-27-4   78-87-5   10061-01-5	1,2-Dichloroethal2-Butanone1,1,1-TrichloroeCarbon TetrachlorVinyl AcetateBromodichlorometl1,2-Dichloropropalcis-1,3-Dichloropropal	thane ride nane propene		10. 5. 10. 5. 5. 5.	
	79-00-5 71-42-2 10061-02-6 108-10-1 1591-78-6 127-18-4 108-88-3 108-90-7 100-41-4	1,1,2-TrichloroetBenzeneTrans-1,3-DichlorBromoform4-Methyl-2-Pentar2-HexanoneTetrachloroethene1,1,2,2-TetrachloroetheneTolueneChlorobenzeneEthylbenzene	ropropene		5. 5. 5. 10. 10. 5. 5. 5. 5.	:n7 : :n7 : :n : :n : :n : :n :

# 1E VOLATILE ORGANICS ANALYSIS DATA SHEET T: 'ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
Trip Blank ...

Lab Code: PACE Case No.: M&E SAS No.: SDG No.:

.datrix: (Soil/water) WATER Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2495

Level: (low/med) LOW Date Received: 5/ 1/91

1 Moisture: not dec.100.
Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Number TICs found: COMPOUND NAME CAS NUMBER RT EST. CONC. : 26. 27. \_\_\_\_\_

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# VOL | LE ORGANICS ANALYSIS DATA SHEET

TPA SAMPLE NO. 3033 1\_\_0\_0\_0\_2\_6\_

Lab Name: PACE Contract: ]

.ab Code: PACE Case No.: M&E SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID:

5. (g/mL) ML Lab File ID: J2500 jample wt/vol:

(low/med) LOW evel: Date Received: 5/ 1/91

% Moisture: not dec.100. Date Analyzed: 5/ 8/91

olumn: (pack/cap) PACK 1.00 Dilution Factor:

CONCENTRATION UNITS:

COMPOUND CAS NO. (ug/L or ug/kg) UG/L 74-87-3-----Chloromethane \_\_\_\_\_\_ 10. : U 74-83-9-----Bromomethane\_\_\_\_: 10. :U 10. :U 75-00-3-----: 10. ١U HU U: 75-09-2----Methylene Chloride\_\_\_\_\_ З. 67-64-1----Acetone \_\_\_\_\_ - 1 3 R 1 **.** 75-15-0-----Carbon Disulfide\_\_\_\_\_ 5. : U 75-35-4----1,1-Dichloroethene\_\_\_\_: 5. :U 75-34-3----1,1-Dichloroethane\_\_\_\_\_ 5. : U 540-59-0----1,2-Dichloroethene (total)\_\_{ :U 5. : U 107-06-2----1,2-Dichloroethane\_\_\_\_\_| 5. :U 78-93-3----2-Butanone\_\_\_\_\_ 10. 10 / 71-55-6----1,1,1-Trichloroethane \_\_\_\_\_ 5. : U 56-23-5-----Carbon Tetrachloride\_\_\_\_\_ 5. :U 108-05-4-----Vinyl Acetate \_\_\_\_\_ 10. :U 75-27-4----Bromodichloromethane\_\_\_\_\_ 5. ١U 78-87-5----1,2-Dichloropropane \_\_\_\_\_ 5. ιU 110061-01-5----cis-1,3-Dichloropropene \_\_\_\_! 5. : U 79-01-6----Trichloroethene \_\_\_\_\_ 4. : J 124-48-1----Dibromochloromethane\_\_\_\_\_ 5. :U 79-00-5----1,1,2-Trichloroethane \_\_\_\_\_ 5. ΙU Lu: 5. : U 5. 75-25-2----Bromoform \_\_\_\_\_ 5. : U 108-10-1-----4-Methyl-2-Pentanone\_\_\_\_\_ 10. :U 591-78-6-----2-Hexanone\_\_\_\_\_ 10. 127-18-4----Tetrachloroethene 26. : 79-34-5----1,1,2,2-Tetrachloroethane \_\_\_ | 5. : U 108-88-3----Toluene 5. :0) 108-90-7-----Chlorobenzene \_\_\_\_\_: 5. :UJ 5. 100-41-4-----Ethylbenzene\_\_\_\_: :U) 100-42-5-----Styrene \_\_\_\_\_: :07 5. :07 | 1330-20-7-----Xylene (total)\_\_\_\_\_|

# VOLATILE ORGANICS ANALYSIS DATA SHEET

T FATIVELY IDENTIFIED COMPOUNDS

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:	3033	;
4		ŧ

EPA SAMPLE NO.

\_ab Name: PACE

Contract: ]

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2500

Level: (low/med) LOW

Date Received: 5/ 1/91

. Moisture: not dec.100.

Number TICs found: 0

Date Analyzed: 5/ 8/91

-Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

CAS NUMBER COMPOUND NAME RT EST. CONC. 0  1.	number rics round	 	 
1			
4	2	 }	 
7.	4	 	 
10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 22. 24. 25. 26. 27. 28. 29.	7	 	 
13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 22. 23. 24. 25. 26. 27. 28.	10.	 	 ! !
16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29.	13	 	 
20. 21. 22. 22. 23. 24. 25. 26. 27. 28. 29.	16		 
23. 24. 25. 26. 27. 28. 29.	20	 	 !
26. 27. 28. 29.	23	 	 ;
29.	26  27	 !	 
,	28		 

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# VOL ILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract: J

Matrix: (Soil/water) WATER Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2503

\_evel: (low/med) LOW Date Received: 5/ 1/91

% Moisture: not dec.100. Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENT (ug/L o				Q	-
74-87-3 74-83-9 75-01-4 75-00-3 75-09-2 67-64-1 75-15-0 75-35-4 75-34-3 540-59-0 67-66-3 107-06-2 78-93-3 71-55-6 56-23-5 108-05-4 75-27-4 78-87-5 10061-01-5 79-01-6 124-48-1 79-00-5 71-43-2 10061-02-6 75-25-2 108-10-1 591-78-6 127-18-4 79-34-5 108-88-3 108-90-7 100-41-4	ChloromethaneBromomethaneVinyl ChlorideChloroethaneMethylene ChlorideCarbon Disulfide1,1-Dichloroethal1,2-DichloroethalChloroform1,2-DichloroethalCarbon TetrachloroethalCarbon TetrachloroethalCarbon TetrachloroethalCarbon TetrachloroethalCarbon TetrachloroethalCarbon TetrachloroethalCarbon Tetrachloroethal	denenenenane	1)_		10. 10. 10. 10. 10. 10. 10. 10. 10. 10.		
1330 <i>-</i> 20 <i>-</i> 7 <i>-</i> 	Xylene (total)			. ¦ - '	5. 	: W: :!_	

## VOLATILE ORGANICS ANALYSIS DATA SHEET T. JATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. 3034

Lab Name: PACE Contract: ]

00036 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2503

Level: (low/med) LOW Date Received: 5/ 1/91

% Moisture: not dec.100. Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

!	CAS NUMBER	COMPOUND NAME		EST. CONC.	: Q ;
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	7 <b>.</b>	,			
!	8:				:;
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	·				
' 1	3				<b></b>
	4		'		
1	5				
1	5		!		:
1	7 <b>.</b> :			;	:
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	1		,	;	
	3	i	;		!
2	i	i	;	'	!
			;		;
2	7;		;		:
28	3:				;
29	j				!
30	<b>`</b>				!

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#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 04/30/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No target compounds were detected. All non-detects were qualified as estimates due to the manual integration of areas for all three internal standards and the majority of the target compounds. Documentation to support these manual integrations has been requested from the laboratory. When received the data will be re-evaluated.

No data was provided for sample S4-1. No explanation was provided by the laboratory.

There appear to be multiple sets of chain-of-custody records in this data package. Not all of the forms are signed by the laboratory. This will need to be addressed to provide defensible data.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable. (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Data Validation for Environmental Project Control, Inc.

Samples Collected April 30, 1991

Volatiles Analyses Data

Method 524.2 Analyses

#### Case Narrative

Seven treatment system samples were collected April 30, 1991 and submitted to Pace, Inc. May 1, 1991. The laboratory was requested to perform purgeable volatile analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\rm O}{\rm C}$   $\pm$   $2^{\rm O}{\rm C}$  range may adversely affect the more volatile compounds.

No target compounds were detected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-1 and no explanation was given by the laboratory.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3017	Trip Blank	04/30/91
3018	S3-1	04/30/91
3019	S4-1	04/30/91
3020	S5-1	04/30/91
3021	S6-3	04/30/91
3022	S6-3 Dup	04/30/91
3023	Field Blank	04/30/91

The areas reviewed during validation are listed below.



#### ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment of Data for a Case

# TRILLIUM

#### DATA VALIDATION

#### I. Sample Holding Times

All samples were analyzed outside the 7-day holding time for non-preserved samples but within the 14-day holding time for aqueous volatile samples. Detection limits for aromatic compounds were qualified as estimates for all samples.

#### II. Instrument Performance

Inst. F met bromofluorobenzene (BFB) ion abundance criteria on 05/11/91 1632, 05/12/91 1423, 05/13/91 1016, and 05/14/91 1038.

#### III. Calibration

The areas for all internal standards and most of the target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all affected compounds for the associated samples have been qualified as estimates.

#### Initial Calibration 05/12/91 Inst F

The associated samples are trip blank, S3-1, S5-1, S6-3, S6-3Dup, S6-3MSD, and Field Blank.

All compounds met the 0.10 response factor criteria established for this project.

All compounds met the 30% relative standard deviation (%RSD) criteria.

Continuing Calibration 05/12/91 1151 on Inst. F met criteria with the exception of the percent difference (%D) for trans-1,3-dichloropropene (35%). This compound was not detected and no data were qualified.

Continuing Calibration criteria were met on 05/13/91 1107 and 05/14/91 1201 on Inst. F.



#### IV. Blanks

No target compounds were detected in the three method blanks, the trip blank or the field blank.

#### V. Surrogate Recovery

All surrogate recoveries were within control limits with the exception of sample S5-1. The surrogates were not added to the sample by the laboratory. Reanalysis could not be performed. No target compounds were detected, but the non-detects have been qualified as estimates.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike recoveries are within the established  ${\tt QC\ limits.}$ 

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits with the exceptions of toluene and chlorobenzene. These compounds were not detected in the unspiked sample and no data have been qualified.

#### VII. Field Quality Control Samples

Sample S6-3 and S6-3Dup were submitted as duplicate samples. No target compounds were detected in either sample.

No target compounds were detected in the field or trip blank.

#### VIII. Internal Standards Performance

All retention times (RT) and internal standard (IS) areas are acceptable.

#### IX. TCL Compound Identification

No compounds were detected.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on



October 15, 1990. Method detection limits (MDLs) determined by the PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined by the PQL study are as follows:

Compound	MDL (ug/L)
vinyl chloride	0.48
chloroethane	0.49
methylene chloride	4.41
1,1-dichloroethene	0.67
1,1-dichloroethane	0.54
trans-1,2-dichloroethene	0.50
chloroform	0.53
1,2-dichloroethane	0.52
1,1,1-trichloroethane	0.44
carbon tetrachloride	0.43
bromodichloromethane	0.38
1,2-dichloropropane	0.45
cis-1,3-dichloropropene	0.33
trichloroethene	0.42
dibromochloromethane	0.33
1,1,2-trichloroethane	0.43
benzene	0.58
trans-1,3-dichloropropene	0.07
bromoform	0.49
tetrachloroethene	0.51
1,1,2,2-tetrachloroethane	0.44
toluene	0.45
chlorobenzene	0.44
ethylbenzene	0.51
m-xylene	0.48
o-, p-xylene	0.93
1,2-dichloroethane-d4	0.50
toluene-d8	0.45
bromofluorobenzene	0.36

The above MDLs should be applied to these data.

#### XI. Tentatively Identified Compounds

No TICs were detected in this sample delivery group.

#### XII. System Performance

System performance was acceptable.



#### XIII. Overall Assessment of Data for a Case

No target compounds were detected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-1 and no explanation was given by the laboratory.

Unifirst	PACE Pro	ject Number: 81050150	3
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	95 0030175 04/30/91 05/01/91 MDL TRIP BLANK	
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane - Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 ND US 0.5 ND US 0.5 ND US 0.5 ND US 0.5 ND US	
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 ND U S 0.5 ND U S 0.5 ND O S 0.5 ND O S 0.5 ND O S	
1,2-Dichloropropane	ug/L	0.5 ND US 0.5 ND 0.5 ND 0.5 ND 0.5 ND 0.5 ND 0.5 ND	
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 ND US 0.5 - ND 0.5 ND 0.5 ND 0.5 ND 0.5 ND	
Ethyl benzene Xylene, total		0.5 ND US	
MDL Method Detection Limit ND Not detected at or above the N	MDL.		

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00034

PACE Project Number: 810501508 00038

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0030183 04/30/91 05/01/91 S3-1
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND US ND US
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND U.S ND I ND I ND I
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND I ND I ND I
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND US

Method Detection Limit Not detected at or above the MDL. MDL

ND

MDL

ND

PACE Project Number: 810501500 0 4 2

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0030205 04/30/91 05/01/91 S5-1
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/i ug/i ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND US ND US
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND   ND   ND   ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND US

Method Detection Limit Not detected at or above the MDL.

PACE Project Number: 810501508 0 0 4 6

PACE Sample Number: Date Collected: Date Received: Parameter		<u>Units</u>	MDL_	95 0030213 04/30/91 05/01/91 S6-3
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	MODIFIED	ug/i ug/i ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WAS
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane		ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND IND IND IND IND IND IND IND IND IND
l,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane l,1,2-Trichloroethane Benzene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND I ND I ND I ND I
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND
Ethyl benzene Xylene, total		ug/L ug/L	0.5 0.5	ND US

MDL Method Detection Limit ND Not detected at or above the MDL.

Uni	fi	rs	t
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PACE Project Number: 810501508 00050

PACE Sample Number: Date Collected: Date Received: Parameter		<u>Units</u>	MDL	95 0030221 04/30/91 05/01/91 S6-3 Dup
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	MODIFIED	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND US ND US
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WS ND ND ND ND ND ND ND ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND ND
Ethyl benzene Xylene, total		ug/L ug/L		ND US

MDL Method Detection Limit
ND Not detected at or above the MDL.



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
INORGANIC ANALYSES DATA

Samples Collected 4/30/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were fair. Many of the detection limits were estimated. In addition, several positive sample results were rejected due to blank contamination. All unqualified sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the Qualified reported values may be used without reservations. results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).

UJ - The material was analyzed for, but was not detected! IN the associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Inorganic Data Validation

for

#### Environmental Project Control, Inc.

#### Samples Collected 4/30/91

#### Case Narrative

This group contained three treatment system samples including one field blank to be analyzed for total metals.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
S1-3FB	3026	4/30/91
S6-3	3027	4/30/91
S1-3	3028	4/30/91

The areas reviewed during validation are listed below.



#### CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
  - IV. ICP Interference Check Sample
  - V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
  - XII. Overall Assessment



#### Data Validation

#### I. Holding Times

All metals analyses were conducted within acceptable holding times.

#### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected above 20 ppb in any sample (including the matrix spike), data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm$  20% of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for chromium and silver were estimated.

#### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

The preparation blank contained lead (0.9 ppb) greater than the IDL.

Continuing calibration blank for lead (0.9 ppb) and arsenic (1.3 ppb) were greater than the IDLs.

The field blank lead (0.70 ppb) and zinc (23.0 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Zinc and lead results were qualified as less than the reported values (U).

Arsenic detection limits were raised to 1.3 U because of the continuing calibration blank result.



#### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

#### V. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except for barium (51.8% recovery), lead (56.5% recovery), and selenium (71.0% recovery). Positive results and detection limits for the above analytes were qualified as estimated (J and UJ).

#### VI. Duplicate Sample Analysis

Duplicate analyses were satisfactory.

#### VII.Laboratory Control Sample Analyses

Laboratory control sample results were satisfactory.

#### VIII. Furnace Atomic Absorption Analysis

Duplicate injections were performed for all samples as required. Results for S6-3 and S1-3 (lead) did not agree within +20%. Results for these samples were estimated.

#### IX. ICP Serial Dilution Analysis

Serial dilutions were conducted on S1-3. All results met the validation criteria of 15%.

#### X. Detection Limits

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### XI. Sample Result Verification

Sample results were acceptable as qualified.



#### XII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm$  20% of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for chromium and silver were estimated.

The preparation blank contained lead (0.9 ppb) greater than the IDL.

Continuing calibration blank for lead (0.9 ppb) and arsenic (1.3 ppb) were greater than the IDLs.

The field blank lead (0.70 ppb) and zinc (23.0 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Zinc and lead results were rejected (U).

Arsenic detection limits were raised to 1.3 U because of the continuing calibration blank result.

Matrix spike analyses were satisfactory except for barium (51.8% recovery), lead (56.5% recovery), and selenium (71.0% recovery). Positive results and detection limits for the above analytes were qualified as estimated (J and UJ).

Duplicate injections were performed for all samples as required. Results for S6-3 and S1-3 (lead) did not agree within +20%. Results for these samples were estimated.

# INORGANIC ANALYSES DATA SHEET 0 1 3

EPA	SAMPLE	ИО

Lab Name: PACE_INCOR	PORATED	Contract:	S1-3FB
Lab Code:	Case No.:	SAS No.:	SDG No.: S1-3
<pre>(atrix (soil/water):</pre>	WATER	Lab Sampl	e ID: 3026.4
Level (low/med):	LOW	Date Rece	ived: 05/01/91
Solids:	0		
Concentra	ation Units ( $ug/L$	or mg/kg dry weight):	UG/L_

CZ	AS No.	Analyte	Concentration	С	Q	M	
174	29-90-5	Aluminum	195	บิ		P	
- 1	40-36-0	Antimony_	0.80	u		-a	Į
- 1	40-38-2	Arsenic	13 2.0	U		F_	
1 '	40-39-3	Barium	12.5	U		P	-
1 '	40-41-7	Beryllium	1.1	Ū		P	7
	40-43-9	Cadmium	3.0	Ū	<del></del>	P	
	40-70-2	Calcium	448	Ū		P	
,	40-47-3	Chromium	9.5	Ū		P	5
1	40-48-4	Cobalt	6.4	Ū		P	
74	40-50-8	Copper	4.5	บ		p_	]
74	39-89-6	Iron	97.7	U		P_	Ì
	39-92-1	Lead	0.70	B		F	uJ
	39-95-4	Magnesium	509	U		P_	
	39-96-5	Manganese	1.5	U		P_	İ
74	39-97-6	Mercury_	0.20	U		cv	
74	40-02-0	Nickel -	8.6	U		P	
74	40-09-7	Potassium	760	U		P	
77	82-49-2	Selenium	0.50	U		F	-
74	40-22-4	Silver	8.1	U		P	۲
	40-23-5	Sodium	390	Ū		P_	3
74	40-28-0	Thallium	0.70	Ū	· ———	F	
i	40-62-2	Vanadium	4.2	U		P_	
1	40-66-6	Zinc	23.0			P	
1		Cyanide		-		NR	
1				-			

lor	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture: _	
lor.	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts: _	_
Commen	ts:						

7/87

### U.S. EPA - CLP

# INORGANIC ANALYSES DATA SHEETO 1 4

EPA	SAMPLE	NO.

Lab Name: PACE	_INCORPORAT	ED	Contract: _		S6-3
Lab Code:	Ca	se No.:	SAS No.		SDG No.: S1-3
Matrix (soil/water): WATER Lab Sample ID: 3027.2					
Level (low/med	l): LOW_	_		Date Rece	eived: 05/01/91
∤ Solids:		0			
Co	ncentration	Units (ug/	/L or mg/kg dry	y weight):	: UG/L_
	CAS No.	Analyte	Concentration	C Q	м
	7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-02-0 7440-23-5 7440-28-0 7440-66-6	Aluminum_ Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Calcium_ Chromium_ Cobalt_ Copper_ Iron_ Lead_ Magnesium Manganese Mercury_ Nickel_ Potassium Selenium_ Silver_ Sodium_ Thallium_ Vanadium_ Zinc_ Cyanide_	1.0   22.0   1.1   3.0   80300   9.5   6.4   8.0   97.7   0.50   11200   10   0.20   8.6   3310   0.50   8.1   128000   0.70   4.2   57.0		
-olor Before:	COLORLESS		cy Before: CLE	_	Texture:
olor After:	COLORLESS	Clarit	y After: CLEA	AR_	Artifacts:
Comments:					
<del></del>		· · · · · · · · · · · · · · · · · · ·			

### U.S. EPA - CLP

1 EP INORGANIC ANALYSES DATA SHEET 0 0 0 1 5

ab Name: PACI	E INCORPORAT	ED	Contract:		S1-3
			SAS No.		SDG No.: S1-3_
trix (soil/w	vater): WATE	R		Lab Samp	le ID: 3028.0
vel (low/med	i): LOW_			Date Rec	eived: 05/01/91
Solids:		.0			
Co	oncentration	Units (ug,	/L or mg/kg dry	y weight)	: UG/L_
	CAS No.	Analyte	Concentration	C Q	M
	7420-00-5	Aluminum	305	<sub>Ū</sub>	P
	7429-90-5 7440-36-0	Aluminum_ Antimony_	195_	u	F
	7440-38-2	Arsenic	1,3 1,0		F-
	7440-38-2	Barium	23.0_	B N	P_ J
	7440-41-7	Beryllium		יש"	[ P ] 3
	7440-43-9	Cadmium	3.0	<u> </u>	P_
	7440-70-2	Calcium	86200		P_
	7440-47-3	Chromium	9.5	<del> </del>	P_ J
	7440-48-4	Cobalt	6.4	ט	P
	7440-50-8	Copper	11.0		P_ P_
	7439-89-6	Iron	204		P_
	7439-92-1	Lead	1.5	B WN	F_ u5
	7439-95-4	Magnesium	12200		P_
	7439,-96-5	Manganese	28.0_		P_
	7439-97-6	Mercury	0.20	<u> </u>	c⊽
	7440-02-0	Nickel	8.6	ט	P_
	7440-09-7	Potassium	3580	В	P_
	7782-49-2	Selenium_	0.50	ַ אַ־ַ ט	<u> </u>
	7440-22-4	Silver	8.1	ט	P_ 5
	7440-23-5	Sodium	139000_		P
	7440-28-0	Thallium_	0.70_	ŪW	P_ F_ P_
	7440-62-2	Vanadium_	4.2_	ט	P_
	7440-66-6	Zinc	272_	_	P_ <b>X</b>
		Cyanide_		_	NR
				_	
lor Before:	COLORLESS	Clarit	y Before: CLEA	AR_	Texture:
lor After:	COLORLESS	Clarit	y After: CLE	AR_	Artifacts:



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
INORGANIC ANALYSES DATA

Samples Collected 4/30/91-5/16/91

Chemical Analyses Performed By
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

All wet chemistry data is acceptable as modified.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Inorganic Data Validation

for

#### Environmental Project Control, Inc.

#### Samples Collected 4/30/91-5/16/91

#### Case Narrative

This group contained 62 water samples analyzed for total suspended solids. Samples S1-16, S1-16FB, and S6-16 were also analyzed for total alkalinity, chloride, silica, fluoride, nitrite/nitrate, total phosphorus, total dissolved solids, sulfate, and hexavalent chromium.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
<b>S1-</b> 3	30280	04/30/91
S1-3FB	30299	04/30/91
S1-3DUP	30302	04/30/91
S1A-3	30310	04/30/91
S1-4	30442	05/01/91
S1-4FB	30477	05/01/91
S1-4DUP	30450	05/01/91
S1A-2	30469	05/01/91
S1-6	31627	05/01/91
S1-6FB	31635	05/01/91
S1-6DUP	31643	05/01/91
S1A-4	31660	05/03/91
S1A-5	31724	05/04/91
S1-7FB	31716	05/04/91
S1-7DUP	31694	05/04/91
S1-7	31686	05/04/91
S1-8	31791	05/05/91
S1-8FB	31805	05/05/91
S1-8DUP	31813	05/05/91
S1A-6	31830	05/05/91
S1-9 .	<b>32054</b> .	05/06/91
S1-9DUP	32062	05/06/91
S1-9FB	32070	05/06/91
S1A-7	32119	05/06/91
S1-10	32321	05/07/91
S1-10DUP	32330	05/07/91
S1-10FB	32348	05/07/91
S1A-8	32364	05/07/91
S1A-9	32747	05/08/91
S1-11	32801	05/08/91
S1-11	32810	05/08/91



S1-11FB	32828	05/08/91
S1-12	33344	05/08/91
S1-12FB	33360	05/09/91
S1-12DUP	33352	05/09/91
S1A-10	33387	05/09/91
S1-13	33590	05/10/91
S1-13DUP	33603	05/10/91
S1-13FB	33611	05/10/91
S1A-11	33638	05/10/91
S1-14	33719	05/11/91
S1-14DUP	33727	05/11/91
S1-14FB	33735	05/11/91
S1A-12	33751	05/11/91
S1-15	34545	05/12/91
S1-15FB	34561	05/12/91
S1-15DUP	34553	05/12/91
S1A-13	34570	05/12/91
S1-16	34707	05/13/91
S1-16FB	34715	05/13/91
S6-16	34790	05/13/91
S1A-15	35002	05/14/91
S1-17FB	34995	05/14/91
S1-17	34979	05/14/91
S1-18	35959	05/15/91
S1-18DUP	35967	05/15/91
S1-18	35983	05/15/91
S1A-16	35991	05/15/91
S1A-17	36114	05/16/91
S1-19DUP	36084	05/16/91
S1-19FB	36092	05/16/91
S1-19	36076	05/16/91

The areas reviewed during validation are listed below.



# Wet Chemistry Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. Matrix Spike Sample Analysis
- V. Duplicate Sample Analysis
- VI. Sample Result Verification
- VII. Other QC
- VIII. Overall Assessment



#### Data Validation

#### I. Holding Times

All wet chemistry analyses were conducted within acceptable holding times. Since the computer generated print-out for hexavalent chromium listed the analysis date as 5/11/91 and the sample collection date as 5/13/91, data were rejected.

#### II. Calibration

The correlation coefficient for the calibration curve for sulfate was 0.9814. All positive sulfate results and detection limits were qualified as estimated.

#### III. Blanks

Field blank results are summarized below.

Sample (FB)	<u>Parameter</u>	Result (ppm)
S1-16	Alkalinity Nitrate/Nitrite	2 0.07
	Silica	5.4
	TDS	4.0

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value.

#### IV. Matrix Spike Sample Analysis

Matrix spike analyses were acceptable.

#### V. Duplicate Sample Analysis

Duplicate results were acceptable with the exception of S1-4 (TDS) which had an RPD of 200%. No data were qualified since the results were 1 ppm and ND with an MDL of 1 ppm.

#### VI. Sample Result Verification

Form I's were correct.



## VII. Overall Assessment

All data were acceptable with the changes noted above.

	Unifirst	PACE Proje	ect Numl	ber: 810501508
	PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0030280 04/30/91 05/01/91 <u>S1-3</u>
,	INORGANIC ANALYSIS			
•	INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	3
, ,	PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL_	95 0030299 04/30/91 05/01/91 <u>S1-3 Dup</u>
4	INORGANIC ANALYSIS			0
	INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1 8	3 05 10/8/91
	PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>		95 0030302 04/30/91 05/01/91 S1-3 FB
i	INORGANIC ANALYSIS			
	INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
-	PACE Sample Number: Date Collected: Date Received: Parameter INORGANIC ANALYSIS	<u>Units</u>	MDL	95 0030310 04/30/91 05/01/91 S1A-3
	INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	3
	MDL Method Detection Limit			

Not Detected at or above the MDL

· ND

Unifirst	PACE Proj	ect Numi	ber: 810502500	
PACE Sample Number Date Collected: Date Received: Parameter INORGANIC ANALYSIS		<u>Units</u>	MDL	95 0030442 05/01/91 05/02/91 S1-4
INDIVIDUAL PARAMET Solids, Total Susp		mg/L	ì	ì
PACE Sample Number Date Collected: Date Received: Parameter INORGANIC ANALYSIS	:	<u>Units</u>	MDL	95 0030450 05/01/91 05/02/91 S1-4 DUP
INDIVIDUAL PARAMETE Solids, Total Suspe			mg/L	1 ND
PACE Sample Number: Date Collected: Date Received: Parameter INORGANIC ANALYSIS		<u>Units</u>	MDL	95 0030469 05/01/91 05/02/91 S1A-2
INDIVIDUAL PARAMETE Solids, Total Suspe	= =		mg/L	1 ND
PACE Sample Number: Date Collected: Date Received: Parameter INORGANIC ANALYSIS		<u>Units</u>	_MDL_	95 0030477 05/01/91 05/02/91 \$1-4FB
INDIVIDUAL PARAMETE Solids, Total Suspe			mg/L	1 ND
- MDL ND	Method Detection Lim Not detected at or a	. •	· •	

Unifirst PACE Project Number: 810504500

PACE Sample Number: 95 0031627

Date Collected: 05/03/91 Date Received: 05/04/91

Parameter Units MDL S1-6

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 1

PACE Sample Number: 95 0031635
Date Collected: 95/03/91

Date Collected: 05/03/91
Date Received: 05/04/91

Parameter Units MDL S1-6 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

. MDL Method Detection Limit

Unifirst PACE Project Number: 810504500

PACE Sample Number: 95 0031643

Date Collected: 05/03/91
Date Received: 05/04/91

Parameter Units MDL S1-6 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 1

MDL Method Detection Limit

00723

Unifirst

PACE Project Number: 810504500

PACE Sample Number: Date Collected: 95 0031660 05/03/91 05/04/91

Date Received: Parameter Units MDL SIA-4

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L l

" MDL

Method Detection Limit

PACE Project Number: 810504501

PACE Sample Number:

95 0031724

Date Collected:

05/04/91

Date Received:

05/04/91

ND

<u>Parameter</u>

Units MDL S1A-5

**INORGANIC ANALYSIS** 

. INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

MDL Method Detec

Method Detection Limit
Not detected at or above the MDL.

I ND

PACE Project Number: 810504501

PACE Sample Number:

95 0031716

Date Collected:

05/04/91

Date Received:

05/04/91

<u>Parameter</u>

MDL

<u>Units</u>

<u>S1-7 FB</u>

INORGANIC ANALYSIS

\_ INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

' MDL

Method Detection Limit

ND

Not detected at or above the MDL.

PACE Project Number: 810504501

PACE Sample Number:

cted:

95 0031694

Date Collected: Date Received:

05/04/91

<u>Parameter</u>

<u>Units</u>

05/04/91 MDL S1-7 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

ND

1

MDL

Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810504501

PACE Sample Number:

95 0031686 05/04/91

ND

Date Collected:

05/04/91

Date Received: Parameter

Units MDL S1-7

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended mg/L 1

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810505500

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0031791 05/05/91 05/05/91 S1-8
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	_MDL_	95 0031805 05/05/91 05/05/91 S1-8 FB
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND

MDL Method Detection Limit Not detected at or above the MDL.

- - ND

ND

Unifirst PACE Project Number: 810505500

PACE Sample Number: 95 0031813
Date Collected: 95/05/91

Date Received: 05/05/91

Parameter Units MDL S1-8 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1

MDL Method Detection Limit

. ND Not detected at or above the MDL.

PACE Project Number: 810505500

PACE Sample Number: Date Collected:

95 0031830 05/05/91

Date Received:

05/05/91

<u>Parameter</u>

<u>Units</u> MDL

S1A-6

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

ND

MDL ND

Method Detection Limit

Not detected at or above the MDL.

PACE Project Number: 810507501

PACE Sample Number: Date Collected:

95 0032054 05/06/91

Date Received:

05/07/91 <u>S1-9</u>

<u>Parameter</u>

<u>Units</u> \_MDL\_

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ND

MDL

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Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810507501

PACE Sample Number:

95 0032062

Date Collected:

05/06/91

Date Received:

05/07/91

<u>Parameter</u>

Units MDL S1-9 Dup

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INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

ND

MDL

Method Detection Limit

ND Not detected at or above the MDL.

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Unifirst PACE Project Number: 810507501

 PACE Sample Number:
 95 0032070

 Date Collected:
 05/06/91

 Date Received:
 05/07/91

Parameter Units MDL S1-9 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

' MDL Method Detection Limit

. ND Not detected at or above the MDL.

PACE Project Number: 810507501

PACE Sample Number:

95 0032119

Date Collected:

05/06/91

Date Received:

05/07/91

<u>Parameter</u>

\_MDL\_

<u>Units</u>

\$1A-7

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

Not detected at or above the MDL. ND

PACE Project Number: 810508501

 PACE Sample Number:
 95 0032321

 Date Collected:
 05/07/91

 Date Received:
 05/08/91

Parameter Units MDL S1-10

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

' MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810508501

PACE Sample Number: Date Collected: Date Received: 95 0032330 05/07/91 05/08/91

<u>Parameter</u>

Units MDL S1-10 Dup

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INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

ND

" MDL

Method Detection Limit

. ND

Not detected at or above the MDL.

Unifirst PACE Project Number: 810508501

PACE Sample Number: 95 0032348 Date Collected: 05/07/91 Date Received: 05/08/91

<u>Parameter</u> <u>Units</u> MDL S1-10 FB

INORGANIC ANALYSIS

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INDIVIDUAL PARAMETERS

Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit

Not detected at or above the MDL. : ND

PACE Project Number: 810508501

PACE Sample Number:

95 0032364

Date Collected:

05/07/91

Date Received:

05/08/91

<u>Parameter</u>

Units MDL S1A-8

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

, MDL

Method Detection Limit

ND Not detected at or above the MDL.

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00139

Unifirst

PACE Project Number: 810509500

PACE Sample Number: 95 0032747 Date Collected: 05/08/91 Date Received: 05/09/91 <u>Parameter</u>

MDL S1A-9 <u>Units</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended mg/L 1 ND

· MDL Method Detection Limit

: ND Not detected at or above the MDL.

PACE Project Number: 810509500

PACE Sample Number: Date Collected: Date Received:

95 0032801

05/08/91

05/09/91

<u>Parameter</u>

<u>Units</u> MDL

51-11

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

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Method Detection Limit

, ND Not detected at or above the MDL.

00141

Unifirst PACE Project Number: 810509500

 PACE Sample Number:
 95 0032810

 Date Collected:
 05/08/91

 Date Received:
 05/09/91

Parameter Units MDL S1-11 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Solids, Total Suspended

Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810509500

PACE Sample Number:

95 0032828

Date Collected:

05/08/91

Date Received:

05/09/91

<u>Parameter</u>

Units MDL S1-11 FB

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INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

ND

MDL

Method Detection Limit

ND Not detected at or above the MDL.

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PACE Project Number: 810510501

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0033344 05/09/91 05/10/91 <u>S1-12</u>
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL_	95 0033360 05/09/91 05/10/91 S1-12 FB
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND

· MDL ND Method Detection Limit

Not detected at or above the MDL.

PACE Project Number: 810510501

PACE Sample Number: Date Collected:

95 0033352 05/09/91

Date Received: Parameter

Units MDL 05/10/91 Units MDL S1-12 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ND

MDL

Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810510501

PACE Sample Number:

95 0033387

Date Collected:

05/09/91

Date Received: Parameter

05/10/91 Units MDL S1A-10

INORGANIC ANALYSIS

. INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ND

MDL ND

Method Detection Limit

Not detected at or above the MDL.

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00146

UNIFIRST/ENSR

PACE Project Number: 810511500

PACE Sample Number: Date Collected:

Date Received:

<u>Parameter</u>

95 0033590

05/10/91

05/11/91

<u>Units</u> MDL S1-13

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL ND

Method Detection Limit

Not detected at or above the MDL.

00147

UNIFIRST/ENSR

PACE Project Number: 810511500

PACE Sample Number: Date Collected:

Date Received:

95 0033603 05/10/91

Parameter

<u>Units</u>

05/11/91 \_MDL S1-13 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L 1 ND

PACE Sample Number: Date Collected: Date Received:

95 0033611 05/10/91

Parameter

<u>Units</u>

05/11/91 MDL \$1-13 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L 1 ND

- MDL Method Detection Limit ND

Not detected at or above the MDL.

PACE Project Number: 810511500

PACE Sample Number:

95 0033638

Date Collected:

05/10/91

Date Received:

05/11/91

<u>Parameter</u>

Units MDL S1A-11

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INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

ND

MDL

Method Detection Limit

ND Not detected at or above the MDL.

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PACE Project Number: 810511501

PACE Sample Number:

95 0033719 05/11/91

Date Collected: Date Received:

05/11/91

<u>Parameter</u>

<u>Units</u> <u>MDL</u> <u>S1-14</u>

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

ND

' MDL

Method Detection Limit

: ND Not detected at or above the MDL.

PACE Project Number: 810511501

PACE Sample Number:

95 0033727

Date Collected:

05/11/91

Date Received:

05/11/91

Parameter

<u>Units</u> MDL S1-14 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

ND

PACE Sample Number: Date Collected:

95 0033735 05/11/91

05/11/91

Date Received:

<u>Parameter</u>

<u>Units</u>

MDL \$1-14 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

Not detected at or above the MDL. ND

PACE Project Number: 810511501

PACE Sample Number: Date Collected: Date Received:

95 0033751 05/11/91 05/11/91

ND

<u>Parameter</u>

Units MDL S1A-12

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L 1

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810512501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034545 05/12/91 05/12/91 <u>S1-15</u>
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0034561 05/12/91 05/12/91 S1-15 FB
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	ma/L	1	ND

MDL Method Detection Limit ND Not detected at or above the MDL.

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UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number:

95 0034553

Date Collected:

05/12/91

Date Received: Parameter

Units MDL 05/12/91 Units MDL S1-15 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

PACE Project Number: 810512501

PACE Sample Number:

95 0034570

Date Collected:

05/12/91

Date Received:

05/12/91

1

<u>Parameter</u> <u>Units</u>

MDL S1A-13

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

ND

\* MDL

Method Detection Limit

ND Not detected at or above the MDL.

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PACE Project Number: 810514500

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0034707 05/13/91 05/14/91 <u>S1-16</u>	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Chromium, Hexavalent Fluoride, Total	mg/L mg/L mg/L mg/L	1 1 <del>0.01</del> 0.1	74 261 <del>ND</del> R ND	Por 5/18/91
Nitrogen, Nitrate plus Nitrite Phosphorus, Total Silica, dissolved Solids, Total Dissolved Solids, Total Suspended Sulfate	mg/L mg/L mg/L mg/L mg/L mg/L	0.2 0.3 0.2 1 1	3.1 ND 11.7 U 626 ND 30.3 J	

MDL

Method Detection Limit Not detected at or above the MDL. ND



UNIFIRST

PACE Project Number: 810514500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034715 05/13/91 05/14/91 S1-16 FB
THODICANTIC ANALYCES			

## **INORGANIC ANALYSIS**

INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Chromium, Hexavalent Fluoride, Total Mercury	mg/L mg/L mg/L mg/L ug/L	1 1 <del>0:01</del> 0.1 0.2	2 ND ND ND ND	psn 5/18/91
Nitrogen, Nitrate plus Nitrite Phosphorus, Total Silica, dissolved Solids, Total Dissolved Solids, Total Suspended Sulfate	mg/L mg/L mg/L mg/L mg/L mg/L	0.02 0.3 0.2 1 1 5	0.07 ND 5.4 4 ND	

MDL Method Detection Limit
ND Not detected at or above the MDL.

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W. W.

	t Number: 8105	14500 95 05	5 0034790 5/13/91 5/14/91	
UNIFIRST  PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL S	6-16	7118191
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Chromium, Hexavalent Fluoride, Total Nitrogen, Nitrate plus Nitrite Phosphorus, Total Silica, dissolved Solids, Total Dissolved Solids, Total Suspended Sulfate	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.1 0.2 0.3 0.2 1	72 259 ND 3.1 ND 11.3 U 678 ND 32.8	
Method Detection Limit  MDL Not detected at or about	ve the MDL.			

ND

UNIFIRST ENSR

PACR Project Number: 810515504

PACE Sample Number: Date Collected:

95 0035002 05/14/91

Date Received:

05/15/91 \_MDL\_

<u>Parameter</u>

<u>Units</u>

S1A-15

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

ND

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

801

UNIFIRST ENSR

PACR Project Number: 810515504

00160 890 7/1/91

PACE Sample Number: Date Collected:

95 0034995 05/14/91

Date Collected: Date Received:

05/15/91 Units MDL S1-17 FB

<u>Parameter</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

ND

! MDL Method Detection Limit

ND Not detected at or above the MDL.

3

:

4

2

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00161

UNIFIRST ENSR

PACE Project Number: 810515504

PACE Sample Number: Date Collected: Date Received:

<u>Parameter</u>

95 0034979

05/14/91

<u>Units</u>

05/15/91 MDL <u>S1-17</u>

ND

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

MDL

Method Detection Limit

Not detected at or above the MDL. ND

00162

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number:

95 0035959

Date Collected:

05/15/91

Date Received:

05/16/91

<u>Parameter</u>

<u>Units</u>

MDL <u>\$1-18</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

ND

MDL

Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR PACE Project Number: 810516513

PACE Sample Number: 95 0035967 Date Collected: 05/15/91

Date Received: 05/16/91

Parameter Units MDL \$1-18 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

PACE Sample Number: 95 0035983

Date Collected: 05/15/91
Date Received: 05/16/91

Date Received: 05/16/91
Parameter Units MDL S1-18 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810516513

PACE Sample Number: Date Collected: Date Received:

95 0035991 05/15/91

05/16/91

<u>Parameter</u>

<u>Units</u>

MDL S1A-16

ND

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

1

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

UNIFIRST/ENSR

PACE Project Number: 810517500

1

PACE Sample Number: Date Collected:

95 0036114

05/16/91

Date Received:

05/17/91

<u>Parameter</u>

<u>Units</u>

<u>MDL</u> <u>\$1A-17</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

ND

MDL

Method Detection Limit

Not detected at or above the MDL. ND

UNIFIRST/ENSR	PACE Project Number:	810517500
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u> <u>MDL</u>	95 0036084 05/16/91 05/17/91 S1-19 Dup
THODCANTO ANALYSTS		

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

 PACE Sample Number:
 95 0036092

 Date Collected:
 05/16/91

 Date Received:
 05/17/91

 Parameter
 Units
 MDL
 S1-19 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit
ND Not detected at or above the MDL.



### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 4/30/91-5/19/91

Chemical Analyses Performed By PACE, Incorporated

August 16, 1991 Revised 10/8/91

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Tetrachloroethene, trichloroethene, and total 1,2-dichloroethene were the only target compound list (TCL) compounds detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit of sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

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### Case Narrative

Thirty treatment system samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. for analysis by EPA Method 524.2. Due to high concentrations of tetrachloroethene, the laboratory was requested to analyze the samples by EPA CLP methodology.

The samples included are:

Client ID	Lab ID	Date of Collection
S2-9	3284	05/08/91
S2-10	3339	05/09/91
S2-11	3364	05/10/91
S2-12	3376	05/11/91
S2-13	3458	05/12/91
S2-14	3474	05/13/91
S2-15	3501	05/14/91
S2-16	3600	05/15/91
S2-17	3612	05/16/91
S2-18	3658	05/17/91
S2-19	3670	05/18/91
S2-20	3730	05/19/91
S3-9	3285	05/08/91
S3-10	3340	05/09/91
S3-11	3353	05/10/91
S3-12	3365	05/11/91
S3-13	3459	05/12/91
S3-14	3475	05/13/91
S3-15	3502	05/14/91
S3-16	3601	05/15/91
S3-17	3613	05/16/91
S3-18	3659	05/17/91
S3-19	3671	05/18/91
S3-20	3731	05/19/91
S4-1	3019	04/30/91
S4-2	3039	05/01/91
S4-3	3130	05/02/91



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

Since all samples were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

#### A. Initial

Initial calibration criteria were met on instruments J and G with the exception of the RRF for 2-butanone on instrument G. All RRFs for 2-butanone were less than the criteria of 0.1 (0.031, 0.030, 0.077). 2-Butanone detection limits for samples analyzed on instrument G were rejected.

#### B. Continuing

Several compounds did not meet acceptable continuing calibration criteria on instrument J. Those affecting data were the RRF's for carbon tetrachloride (0.088) analyzed on 5/11 and 2-butanone (0.096) analyzed on 5/13. Since these compounds did not meet the RRF acceptance criteria of 0.1, detection limits for samples analyzed on these dates were rejected.

Several compounds did not meet acceptable continuing calibration criteria on instrument G. Those affecting data were the RRF's for 2-butanone which were unacceptable in each continuing calibration standard analysis. Detection limits for 2-butanone were rejected for all samples analyses on instrument G.



#### IV. Blanks

Toluene was detected in Method Blank VBLK02 at 0.8 ppb. The result for toluene in Sample S4-2 was qualified as less than the reported value.

No other data were affected by compounds detected in the method blanks.

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

No matrix spike or duplicate matrix spike were performed on these samples. The data should be used with caution.

### VII. Field Duplicates

Field duplicate samples collected for analysis with these samples were analyzed by Method 524.2.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

Target compounds were properly identified.

### X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data.

### XI. Tentatively Identified Compounds

No TICs were detected.

### XII. System Performance

System performance was acceptable.



### XIII. Overall Assessment of Data for a Case

All detection limits were acceptable except as noted in Sections I and III. Although surrogates and internal standard recoveries were acceptable, the data should be used with caution since no matrix spikes or duplicate matrix spikes were analyzed.

### VOLATTLE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO. S2-9 00079

Contract: ab Name: PACE

ab Code: PACE SAS No.: Case No.: EPC

108-10-1----4-Methyl-2-Pentanone

79-34-5----1,1,2,2-Tetrachloroethane

127-18-4----Tetrachloroethene

591-78-6----2-Hexanone

108-90-7-----Chlorobenzene

100-41-4----Ethylbenzene

100-42-5-----Styrene 1330-20-7-----Xylene(total)

108-88-3----Toluene

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3284.2

, ample wt/vol:

(g/mL) ML 5.

Lab File ID: G3020

Date Received:

519191 212 5/8/91 10/3/41

Level: (low/med) LOW

Moisture: not dec.100.

Date Analyzed: 5/21/91

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Column: (pack/cap) PACK

Dilution Factor:

1.00

_	·· (pack) cap)	111011				
	CAS NO.	COMPOUND	CONCENTRATION (ug/L or ug/		Q	100m
	74-83-9 75-01-4 75-00-3 75-09-2 67-64-1 75-15-0	ChloromethaneBromomethaneVinyl ChloriChloroethaneMethylene ChAcetoneCarbon Disul	de loride fide ethene	- 10. 10. 10. 10. 5. 10. 5.	ם ט ט ט ט ט ט ט ט ט	
	540-59-0 67-66-3 107-06-2	1,1-Dichloro 1,2-Dichloro Chloroform 1,2-Dichloro	ethene (total)	5. 5. 5. 10.	ם ה ה ה	
	56-23-5 108-05-4 75-27-4	1,1,1-Trichl Carbon Tetra Vinyl Acetat Bromodichloro 1,2-Dichloro	chloride e omethane	5. 5. 10. 5.	ם ם ם ם	
	79-01-6 124-48-1 79-00-5	cis-1,3-Dich Trichloroeth Dibromochloro	loropropeneene	5. 5. 5. 5.	บ บ บ	
	71-43-2 10061-02-6 75-25-2	Trans-1,3-Did	chloropropene _	5. 5. 5.	ט ט ט	

### 1E LE ORGANICS ANALYSIS DATA SHEET ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-9 -

ab Name: PACE

Contract:

Tab Code: PACE Case No.: EPC SAS No.:

SDG No.:

00080

.atrix: (soil/water) WATER

Lab Sample ID: 3284.2

cample wt/vol: 5. (g/mL) ML

Lab File ID: G3020 5/9/91

Level: (low/med) LOW

Date Received: 5/9/91 Ex 10/3/91

Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1.				
3.				
5				
7.				
9.				
10.				
13.				
15:				
17.				
19.				
20.				
22.				
24.				
26.				
27.				
30				

FORM I VOA-TIC

### VOLANTE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO. S2-10

Lab Name: PACE Contract:

SDG No.: 00085 Lab Code: PACE Case No.: EPC SAS No.:

Lab Sample ID: 3339.5 Matrix: (soil/water) WATER

Lab File ID: G3022 Sample wt/vol: 5. (g/mL) ML

Date Received: 5/-9/91 5/10/91 Level: (low/med) LOW

Date Analyzed: 5/21/91 % Moisture: not dec.100.

Dilution Factor: 1.00 Column: (pack/cap) PACK

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

		<del></del>
74-87-3Chloromethane	10.	ט
74-83-9Bromomethane	10.	ט
75-01-4Vinyl Chloride	10.	U
75-00-3Chloroethane	10.	U
75-09-2Methylene Chloride	5.	U
67-64-1Acetone	10.	U
75-15-0Carbon Disulfide	5.	ט
75-35-41,1-Dichloroethene	5.	U
75-34-31,1-Dichloroethane	5.	U
540-59-01,2-Dichloroethene (total)	5.	ט
67-66-3Chloroform	5.	U
107-06-21,2-Dichloroethane	5.	U
78-93-32-Butanone	10.	<del> v</del> −₽
71-55-61,1,1-Trichloroethane	5.	ט "
56-23-5Carbon Tetrachloride	5.	U
108-05-4Vinyl Acetate	10.	ט
75-27-4Bromodichloromethane	5.	שׁ
78-87-51,2-Dichloropropane	5.	บ
10061-01-5cis-1,3-Dichloropropene	5.	Ŭ
79-01-6Trichloroethene	5.	J
124-48-1Dibromochloromethane	5.	<b>ט</b>
79-00-51,1,2-Trichloroethane	5.	Ū
71-43-2Benzene	5.	ΙŬΤ
10061-02-6Trans-1,3-Dichloropropene	5.	ָט l
75-25-2Bromoform	5.	Ū
108-10-14-Methyl-2-Pentanone	10.	<u>ט</u>
591-78-62-Hexanone	10.	Ū
127-18-4Tetrachloroethene	120.	1
79-34-51,1,2,2-Tetrachloroethane	5.	ט
108-88-3Toluene	5.	20
108-90-7Chlorobenzene	5.	ן מ
100-41-4Ethylbenzene	5.	ען מ
100-41-4Ethylbenzene 100-42-5Styrene	5.	ا لقا
1320-20-7	5.	וו
1330-20-7Xylene(total)	3.	1 上 1
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FORM I VOA

# VOLATULE ORGANICS ANALYSIS DATA SHEET TENATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-10-

Lab Name: PACE

Contract:

Matrix: (soil/water) WATER

SDG No.: 00086 Lab Sample ID: 3339.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3022

Level: (low/med) LOW

Date Received:

5/10/91 25 d 5/-9/91-25 d

Date Analyzed: 5/21/91

& Moisture: not dec.100.

Dilution Factor: 1.00

Column: (pack/cap) PACK

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q ===
1		_		
3.				
5:		- [		
6				
7. 8.				
9.		_		
. → •				
3.		-		
4.				
5.		_		
7.				
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3.4.		-		
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FORM I VOA-TIC

### VOLA LE ORGANICS ANALYSIS DATA SHEET

S2-11

Lab Name: PACE Contract:

100-41-4----Ethylbenzene

1330-20-7-----Xylene(total)

100-42-5----Styrene

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00092

Matrix: (soil/water) WATER Lab Sample ID: 3364.6

ample wt/vol: 5. (g/mL) ML Lab File ID: G3061

Level: (low/med) LOW

Date Received:  $\frac{5}{10/91}$ 

Moisture: not dec.100. Date Analyzed: 5/23/91

↑olumn: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L 10. U 74-87-3-----Chloromethane 74-83-9----Bromomethane U 10. 75-01-4-----Vinyl Chloride U 10. 75-00-3-----Chloroethane U 10. U 75-09-2----Methylene Chloride 5. U 67-64-1----Acetone 10. 5. 75-15-0-----Carbon Disulfide U 5. U 75-35-4----1,1-Dichloroethene U 75-34-3----1,1-Dichloroethane 5. 540-59-0----1,2-Dichloroethene (total) 5. U 67-66-3-----Chloroform 5. U 5. U 107-06-2----1,2-Dichloroethane 78-93-3----2-Butanone <del>u</del> R 10. 71-55-6----1,1,1-Trichloroethane U 5. 56-23-5-----Carbon Tetrachloride\_ 5. U 108-05-4-----Vinyl Acetate U 10. 75-27-4----Bromodichloromethane 5. U 78-87-5----1,2-Dichloropropane
10061-01-5----cis-1,3-Dichloropropene U 5. 5. U 79-01-6----Trichloroethene 5. U 124-48-1-----Dibromochloromethane 5. U 79-00-5----1,1,2-Trichloroethane 5. U 71-43-2----Benzene UJ 5. 10061-02-6----Trans-1, 3-Dichloropropene U 5. 75-25-2----Bromoform 5. U 108-10-1----4-Methyl-2-Pentanone U 10. 591-78-6----2-Hexanone U 10. 127-18-4----Tetrachloroethene 170. 79-34-5----1,1,2,2-Tetrachloroethane \_ 5. U 5. UJ 108-88-3----Toluene 108-90-7-----Chlorobenzene 5. U

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# VOLA LE ORGANICS ANALYSIS DATA SHEET TEL ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-12-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3364.6 00093

Fample wt/vol: 5. (g/mL) ML

Lab File ID: G3061

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Level: (low/med) LOW

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
2		-		
4				
6				
8				
9. 10. 11.				
13				
14.				
16. 17. 18.				
19				
22.				
23. 24. 25.				
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FORM I VOA-TIC

## VOLA LE ORGANICS ANALYSIS DATA SHEET

S2-12 S2-12

Lab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00101

Matrix: (soil/water) WATER Lab Sample ID: 3376.0

iample wt/vol: 5. (g/mL) ML Lab File ID: G3053

Level: (low/med) LOW Date Received: 5/11/91

Moisture: not dec.100. Date Analyzed: 5/22/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTR (ug/L or			Q	RX)
74-83-9 75-01-4 75-00-3 75-09-2 67-64-1 75-15-0 75-35-4 75-34-3 67-66-3 107-06-2 78-93-3 71-55-6 56-23-5 108-05-4 75-27-4 78-87-5 10061-01-5 79-01-6 124-48-1 79-00-5 71-43-2 10061-02-6 75-25-2 108-10-1 591-78-6 127-18-4 79-34-5 108-88-3 108-88-3 100-41-4 100-42-5	Carbon Disulfic1,1-Dichloroet1,2-Dichloroet1,2-Dichloroet1,2-Dichloroet2-Butanone1,1,1-TrichlorCarbon TetrachVinyl AcetateBromodichloron1,2-Dichloroprcis-1,3-Dichloron1,1,2-TrichlorBenzeneTrichloroetherBromoform4-Methyl-2-Per2-HexanoneTetrachloroeth1,1,2,2-Tetrachloroeth1,1,2,2-Tetrachloroeth1,1,2,2-TetrachloroethTolueneChlorobenzene	cride		10. 10. 10. 10. 10. 5. 5. 5. 5. 10. 5. 5. 10. 13. 5. 5. 5. 5. 10. 13. 5. 5. 5. 5. 5. 10. 13. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.	מממממ ממממממממממממממממממממממממ	

# VOLA LE ORGANICS ANALYSIS DATA SHEET TELLATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-12-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

00102

Matrix: (soil/water) WATER

Lab Sample ID: 3376.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3053

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	==
1				
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FORM I VOA-TIC

## VOLANLE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO. S6-13TB

52-13

Lab Name: PACE

Contract:

SAS No.:

00 bBG7 No .:

Matrix: (soil/water) WATER

Lab Code: PACE Case No.: EPC

Lab Sample ID: 3458.8

3ample wt/vol:

5. (g/mL) ML

Lab File ID: G3062

Level: (low/med) LOW

Date Received: 5/12/91

& Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND (ug/L or ug/	/ Kg) UG/ L	
74-87-3	Chloromethane	10.	ט
74-83-9	Bromomethane	10.	ן ט
	Vinyl Chloride	10.	ע
75-00-3	Chloroethane	10.	ן ט
75-09-2	Methylene Chloride	5.	ע
67-64-1	Acetone	10.	ט
75-15-0	Carbon Disulfide	5.	ט
75-35-4	1,1-Dichloroethene	5.	ט
	1,1-Dichloroethane	5.	ע
540-59-0	1,2-Dichloroethene (total)	5.	ן טן
67-66-3	Chloroform	5.	ן ט
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	<del>  U</del> R
71-55-6	1,1,1-Trichloroethane	5.	<u>ט</u>
56-23-5	Carbon Tetrachloride	5.	ן ט
108-05-4	Vinyl Acetate	10.	ן ט
75-27-4	Bromodichloromethane	5.	ן טן
78-87-5	1,2-Dichloropropane	5.	ט
10061-01-5	cis-1,3-Dichloropropene	5.	ן טן
79-01-6	Trichloroethene	5.	ן טן
124-48-1	Dibromochloromethane	5.	ן טן
79-00-5	1,1,2-Trichloroethane	5.	ן טן
71-43-2	Benzene	5.	105
10061-02-6	Trans-1, 3-Dichloropropene	5.	ן ט
75-25-2	Bromoform	5.	ן מן
	4-Methyl-2-Pentanone	10.	ו טו
591-78-6	2-Hexanone	10.	ו ט
127-18-4	Tetrachloroethene	153.	
79-34-5	1,1,2,2-Tetrachloroethane	5.	ן ט
108-88-3	Toluene	5.	102
108-90-7	Chlorobenzene	5.	ו נים
100-41-4	Ethylbenzene	5.	u
100-42-5	Styrene	5.	١٥١
1330-20-7	Xylene(total)	5.	10 1

### 1E VOLAT LE ORGANICS ANALYSIS DATA SHEET TENATIVELY IDENTIFIED COMPOUNDS

S6-13PB 52-13

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC

SAS No.: 00108 SDG No.:

MS 7/8/91

EPA SAMPLE NO.

Matrix: (soil/water) WATER

Lab Sample ID: 3458.8

;ample wt/vol: 5. (g/mL) ML

Lab File ID: G3062

Date Received: 5/12/91

Level: (low/med) LOW : Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

## VOLATLE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO. S2-14

Lab Name: PACE Contract:

sas No. D 0 1 1 6 ab Code: PACE Case No.: EPC SDG No.:

Lab Sample ID: 3474.0 Matrix: (soil/water) WATER

ample wt/vol: 5. (g/mL) ML Lab File ID: G3085

Span Received: 5/13/91 10/3/91 Level: (low/med) LOW

Date Analyzed: 5/23/91 Moisture: not dec.100.

Dilution Factor: 1.00 folumn: (pack/cap) PACK

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q	1, 18/4/
74-87-3Chloromethane       10. U         74-83-9Bromomethane       10. U         75-01-4Vinyl Chloride       10. U         75-09-3Chloroethane       10. U         75-09-2Methylene Chloride       5. U         67-64-1Acetone       10. U         75-15-0Carbon Disulfide       5. U         75-35-41, 1-Dichloroethane       5. U         540-59-01, 2-Dichloroethane       5. U         540-59-01, 2-Dichloroethane       5. U         67-66-3Chloroform       5. U         107-06-21, 2-Dichloroethane       5. U         78-93-32-Butanone       5. U         71-55-61, 1, 1-Trichloroethane       5. U         108-05-4Vinyl Acetate       10. U         78-87-5Carbon Tetrachloride       5. U         108-05-4Vinyl Acetate       5. U         79-01-6Trichloroethane       5. U         1061-01-5	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \

## VOLA LE ORGANICS ANALYSIS DATA SHEET TEXATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-14-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3474.00117

sample wt/vol:

5. (g/mL) ML

Lab File ID: G3085

:\_\_\_

Level: (low/med) LOW

5/14/71 21.0

Date Received: 5/13/91 10/3/71

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor:

1.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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14. 15. 16.				
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FORM I VOA-TIC

## VOLAPLE ORGANICS ANALYSIS DATA SHEET

PA SAMPLE NO. S2-15

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.:

00125 No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3501.0

Sample wt/vol:

5. (g/mL) ML

Lab File ID: J2708

Level: (low/med) LOW

51,5/91 EKJ Date Received: 5/14/91 10/3/4

% % Moisture: not dec.100.

Date Analyzed: 5/25/91

; Column: (pack/cap) PACK

Dilution Factor:

1.00

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

74-87-3Chloromethane	10.	บ
74-83-9Bromomethane	10.	U
75-01-4Vinyl Chloride	10.	U
75-00-3Chloroethane	10.	שׁ
75-09-2Methylene Chloride	5.	U
67-64-1Acetone	10.	U
75-15-0Carbon Disulfide	5.	บ
75-35-41,1-Dichloroethene	5.	U
75-34-31,1-Dichloroethane	3.	J
540-59-01,2-Dichloroethene (total)	8.	
67-66-3Chloroform	5.	U
107-06-21,2-Dichloroethane	5.	U
78-93-32-Butanone	16.	U
71-55-61,1,1-Trichloroethane	6.	1
56-23-5Carbon Tetrachloride	5.	U
108-05-4Vinyl Acetate	10.	U
75-27-4Bromodichloromethane	5.	U
78-87-51,2-Dichloropropane	· 5 <b>.</b>	טן
.0061-01-5cis-1.3-Dichloropropene	5.	ט
79-01-6Trichloroethene	10.	
124-48-1Dibromochloromethane	5.	שׁ
79-00-51.1.2-Trichloroethane	5.	\U _
71-43-2Benzene	5.	ľυJ
.0061-02-6Trans-1,3-Dichloropropene	5.	U
75-25-2Bromoform	5.	ไซ
108-10-14-Methyl-2-Pentanone	10.	U
591-78-62-Hexanone	10.	ប
127-18-4Tetrachloroethene	110.	
79-34-51,1,2,2-Tetrachloroethane	5.	ַ ט
108-88-3Toluene	5.	105
108-90-7Chlorobenzene	5.	ľυľ
100-41-4Ethylbenzene	5.	ט /
100-42-5Styrene	5.	ן ט
1330-20-7Xylene (total)	5.	U

## VOLA LE ORGANICS ANALYSIS DATA SHEET TENATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-15-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC

SAS No.:

Matrix: (soil/water) WATER

00126 SDG No.: Lab Sample ID: 3501.0

; Sample wt/vol:
5. (g/mL) ML

Lab File ID: J2708

5/15/91 EF. Date Received: 5/14/91 10/3/11

Level: (low/med) LOW

Date Analyzed: 5/25/91

Moisture: not dec.100.

Dilution Factor: 1.00

Column: (pack/cap) PACK

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

### VOLATLE ORGANICS ANALYSIS DATA SHEET

S2-16

15/3/71

Lab Name: PACE Contract:

CAS NO.

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00135

Matrix: (soil/water) WATER Lab Sample ID: 3600.9

Sample wt/vol: 5. (q/mL) ML Lab File ID: J2710

COMPOUND

Level: (low/med) LOW Date Received:  $\frac{5}{14}$ 

% Moisture: not dec.100.
Date Analyzed: 5/25/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

74-87-3----Chloromethane 10. U 74-83-9----Bromomethane 10. U 75-01-4-----Vinyl Chloride\_ U 10. 75-00-3-----Chloroethane U 10. 75-09-2----Methylene Chloride 5. U 10. U 67-64-1-----Acetone 75-15-0-----Carbon Disulfide U 5. 75-35-4----1,1-Dichloroethene\_ 5. U 75-34-3----1,1-Dichloroethane J 9. 540-59-0----1,2-Dichloroethene (total) 67-66-3-----Chloroform 5. U 5. U 107-06-2----1,2-Dichloroethane 78-93-3----2-Butanone 10. IJ 7. 71-55-6----1,1,1-Trichloroethane \_ U 56-23-5----Carbon Tetrachloride\_ 5. 108-05-4-----Vinyl Acetate 10. U 75-27-4----Bromodichloromethane U 5. 78-87-5----1,2-Dichloropropane U 5. 10061-01-5----cis-1,3-Dichloropropene U 5. 79-01-6----Trichloroethene 5. J 124-48-1-----Dibromochloromethane 5. U 79-00-5-----1,1,2-Trichloroethane 5. U 71-43-2----Benzene 5. UJ 10061-02-6----Trans-1,3-Dichloropropene 5. U 75-25-2----Bromoform U 5. 108-10-1----4-Methyl-2-Pentanone U 10. 591-78-6----2-Hexanone U 10. 127-18-4----Tetrachloroethene 130. 79-34-5----1,1,2,2-Tetrachloroethane 5. U UJ 108-88-3----Toluene 5. 108-90-7-----Chlorobenzene 5. U١ 100-41-4----Ethylbenzene 5. U 100-42-5----Styrene 5. U 1330-20-7-----Xylene (total) U .

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FORM I VOA

# 1E VOLA LE ORGANICS ANALYSIS DATA SHEET TE ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-16-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3600.9 00136

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2710

.\_evel: (low/med) LOW

Date Received:

5/14/91 10/3/91

3 Moisture: not dec.100.

Date Analyzed: 5/25/91

'Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	ç
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FORM I VOA-TIC

## VOLATLE ORGANICS ANALYSIS DATA SHEET

S2-17

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 0145

Matrix: (soil/water) WATER Lab Sample ID: 3612.2

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2743

Level: (low/med) LOW Date Received:  $\frac{5/16/91}{5/16/91}$  Lovel:

% Moisture: not dec.100.
Date Analyzed: 5/29/91

Column: (pack/cap) PACK Dilution Factor: 2.50

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

<del></del>	<del></del>	1	T
74-87-3	Chloromethane	25.	U
	Bromomethane	25.	U
75-01-4	Vinyl Chloride	25.	U
75-00-3	Chloroethane	25.	U
75-09-2	Methylene Chloride	12.	U
67-64-1	Acetone	25.	U
75-15-0	Carbon Disulfide	12.	U
	1,1-Dichloroethene	12.	ט
75-34-3	1,1-Dichloroethane	12.	U
540-59-0	1,2-Dichloroethene (total)_	9.	J
	Chloroform	12.	U
	1,2-Dichloroethane	12.	U
	2-Butanone	25.	U
71-55-6	1,1,1-Trichloroethane	7.	J
	Carbon Tetrachloride	12.	U
108-05-4	Vinyl Acetate	25.	U
75-27-4	Bromodichloromethane	12.	U
78-87-5	1,2-Dichloropropane	12.	U
.0061-01-5	cis-1,3-Dichloropropene	12.	U
79-01-6	Trichloroethene	13.	İ
124-48-1	Dibromochloromethane	12.	U
	1,1,2-Trichloroethane	12.	U
71-43-2	Benzene	12.	UJ
	Trans-1,3-Dichloropropene	12.	<b>ט</b>
75-25-2	Bromoform	12.	U
	4-Methyl-2-Pentanone	25.	ט
	2-Hexanone	25.	ט
127-18-4	Tetrachloroethene	2,0.	1
	1,1,2,2-Tetrachloroethane	12.	ַ ט
108-88-3	Toluene	12.	U 5
	Chlorobenzene	12.	U
100-41-4	Ethylbenzene	12.	ען ען
100-42-5	Styrene	12.	ΙŪ \
1330-20-7	Xylene (total)	12.	lu L

## VOLA LE ORGANICS ANALYSIS DATA SHEET TENATIVELY IDENTIFIED COMPOUNDS

EPA	SAMPLE	NO.
S2-	-17-	

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3612.2 00146

'Sample wt/vol:

5. (g/mL) ML

Lab File ID: J2743

5/17/41 EX 3/61

Level: (low/med) LOW

Date Received:

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CONCENTRATION UNITS: Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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10.				
11.				<del></del>
13				
14.		<u></u>		
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23.		<del></del>		
25.				
26				<del></del>
20.				
29.				

FORM I VOA-TIC

## VOLATLE ORGANICS ANALYSIS DATA SHEET

S2-18

A SAMPLE NO.

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SDG No.: SAS No.:

Lab Sample ID: 3658.0 0154 Matrix: (soil/water) WATER

Lab File ID: J2785 Sample wt/vol: 5. (g/mL) ML

Date Received: 5/17/91 (2/3//1 Level: (low/med) LOW

Date Analyzed: 5/30/91 t Moisture: not dec.100.

Dilution Factor: 5.00 · Column: (pack/cap) PACK

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

	1	
74-87-3Chloromethane	50.	U
74-83-9Bromomethane	50.	U
75-01-4Vinyl Chloride	50.	U
75-00-3Chloroethane	50.	U
75-09-2Methylene Chloride	25.	U
67-64-1Acetone	50.	ט
75-15-0Carbon Disulfide	25.	บ
75-35-41,1-Dichloroethene	25.	U
75-34-31,1-Dichloroethane	25.	ַ
540-59-01,2-Dichloroethene (total)	25.	ט
67-66-3Chloroform	25.	U
107-06-21,2-Dichloroethane	25.	U
78-93-32-Butanone	50.	U
71-55-61,1,1-Trichloroethane	25.	U
56-23-5Carbon Tetrachloride	25.	ט
108-05-4Vinyl Acetate	50.	U
75-27-4Bromodichloromethane	25.	U
78-87-51,2-Dichloropropane	25.	U
10061-01-5cis-1,3-Dichloropropene	25.	ָּט
79-01-6Trichloroethene	25.	U
124-48-1Dibromochloromethane	25.	U
79-00-51,1,2-Trichloroethane	25.	ַּט
71-43-2Benzene	25.	ひゴ
10061-02-6Trans-1,3-Dichloropropene	25.	ַ "ט
75-25-2Bromoform	25.	ט
108-10-14-Methyl-2-Pentanone	50.	U
591-78-62-Hexanone	50.	ַ
127-18-4Tetrachloroethene	350.	
79-34-51,1,2,2-Tetrachloroethane	25.	U
108-88-3Toluene	25.	ひろ
108-90-7Chlorobenzene	25.	עו
100-41-4Ethylbenzene	25.	ע \
100-42-5Styrene	25.	ט
1330-20-7Xylene (total)	25.	ן ט
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### 1E VOLATLE ORGANICS ANALYSIS DATA SHEET TEXTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-13-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3658.0 () 155

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2785

Level: (low/med) LOW

Date Received:

5/18/91 6/6 3/9!

% Moisture: not dec.100.

Number TICs found: 0

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
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	4. 5. 6.				
	8. 9.				
	11				
;	14				
·	17				
	20				
	22. 23. 24. 25.				
	26. 27. 28.				
	29.				

FORM I VOA-TIC

## VOLA LE ORGANICS ANALYSIS DATA SHEET

S2-19

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3670.00160

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3219

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec.100.
Date Analyzed: 5/30/91

Column: (pack/cap) PACK Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION (ug/L or ug/		o 18
74-83-9 75-01-4 75-00-3 75-09-2 67-64-1 75-15-0 75-35-4 75-34-3 107-06-2 78-93-3 108-05-4 75-27-4 78-87-5 10061-01-5 79-01-6 124-48-1 79-00-5 71-43-2 10061-02-6 75-25-2 108-10-1 591-78-6 127-18-4 79-34-5 108-88-3 108-90-7 100-41-4 100-42-5	ChloromethaneBromomethaneBromomethaneVinyl ChlorideChloroethaneMethylene ChloroethaneCarbon Disulfi1,1-Dichloroethane1,2-DichloroethaneChloroform1,2-DichloroethaneCarbon TetracheneVinyl AcetateBromodichlorom1,2-Dichloropr	oride  ide thene thane thene (total) thane roethane ropane ropropene ne thane rothane rothane rothane rothane rothane thane rothane thane rothane thane rothane	50. 50. 50. 50. 50. 50. 50. 50.	ממממממאמממממממממממממממממממממממממממממממ

# 1E VOLATULE ORGANICS ANALYSIS DATA SHEET TEN TIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-19-

\_ab Name: PACE

Contract:

.Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab sample ID: 3670.0

Gample wt/vol: 5. (g/mL) ML

Lab File ID: G3219

Level: (low/med) LOW

Date Received: 5/18/91

; Moisture: not dec.100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Number TICs found: 0

Dilution Factor: 5.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAC MINDED	COMPOUND NAME	RT	EST. CONC.	Q
CAS NUMBER	COMPOUND NAME	-		
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FORM I VOA-TIC

S2-20

0

Lab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3730.700167

ample wt/vol: 5. (g/mL) ML Lab File ID: G3240

Level: (low/med) LOW Date Received: 5/19/91

Moisture: not dec.100. Date Analyzed: 5/30/91

Column: (pack/cap) PACK Dilution Factor: 2.50

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

25. 74-87-3-----Chloromethane \_ 74-83-9----Bromomethane 25. U 75-01-4-----Vinyl Chloride\_ 25. U 75-00-3----Chloroethane 25. U 75-09-2----Methylene Chloride 12. U U 67-64-1-----Acetone 25. U 75-15-0-----Carbon Disulfide 12. 75-35-4----1,1-Dichloroethene\_ U 12. 75-34-3----1,1-Dichloroethane U 12. 540-59-0----1,2-Dichloroethene (total)\_ U 12. U 67-66-3----Chloroform 12. 107-06-2----1,2-Dichloroethane\_ U 12. <del>U</del> 78-93-3----2-Butanone 25. 71-55-6----1,1,1-Trichloroethane U 12. 56-23-5-----Carbon Tetrachloride\_ U 12. 108-05-4-----Vinyl Acetate 25. U 75-27-4----Bromodichloromethane U 12. 78-87-5----1,2-Dichloropropane U 12. 10061-01-5----cis-1,3-Dichloropropene 12. U 79-01-6----Trichloroethene U 12. 124-48-1-----Dibromochloromethane U 12. 79-00-5----1,1,2-Trichloroethane 12. U ūJ 71-43-2----Benzene 12. 10061-02-6----Trans-1,3-Dichloropropene U 12. 75-25-2----Bromoform U 12. 108-10-1----4-Methyl-2-Pentanone 25. U 591-78-6----2-Hexanone 25. U 127-18-4----Tetrachloroethene 180. 79-34-5----1,1,2,2-Tetrachloroethane U 12. UJ 108-88-3----Toluene 12. 108-90-7-----Chlorobenzene U 12. 100-41-4----Ethylbenzene\_ U 12. 100-42-5----Styrene U 12. 1330-20-7-----Xylene(total) 12. ל ט

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## VOLATILE ORGANICS ANALYSIS DATA SHEET TEN ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S2-2C-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.: 00168

Matrix: (soil/water) WATER

Lab Sample ID: 3730.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3240

Level: (low/med) LOW

% Moisture: not dec.100.

Date Received: 5/19/91

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

number TICs found:	cs found: 0 (ug/L or ug/Kg) UG/L			
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		_		
2				
·		_		
5:		-		
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/ ·				
·		_		<u> </u>
9.		-		
12				
13.		-		
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16		_		
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FORM I VOA-TIC

A SAMPLE NO. s3**-**9

Lab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Lab Sample ID: 3285.2 Matrix: (soil/water) WATER

Lab File ID: G3009 ample wt/vol: 5. (g/mL) ML

5/9/91 ELS 5/8/91 10/3/91 Date Received: Level: (low/med) LOW

Date Analyzed: 5/21/91 Moisture: not dec.100.

Dilution Factor: 5.00 Column: (pack/cap) PACK

		CONCENTRATION UN	IIIS:
CAS NO.	COMPOUND	(ug/L or ug/Kg)	UG/L

74-87-3	Chloromethane	50.	U
74-83-9	Bromomethane	50.	ប
75-01-4	Vinyl Chloride	50.	ט
75-00-3	Chloroethane	50.	ט
75-09-2	Methylene Chloride	5.	J
67-61-1	acetone	50.	ן ט
75-15-0	Carbon Disulfide	25.	ן ט
75-35-4	1.1-Dichloroethene	25.	ט
75-34-3	1,1-Dichloroethane	25.	ט
540-59-0	1,2-Dichloroethene (total)	25.	ן ט
67-66-3	Chloroform	25.	ו טו
107-06-2	1,2-Dichloroethane	25.	ן טן
78-93-3	2-Butanone	50	to R
71-55-6	1,1,1-Trichloroethane	22.	J
56-23-5	Carbon Tetrachloride	25.	ט
108-05-4	Vinvl Acetate	50.	ן ט
75-27-4	Bromodichloromethane	25.	ן מן
78-87-5	1,2-Dichloropropane	25.	ן ט
10061-01-5	cis-1,3-Dichloropropene	25.	ן ט
79-01-6	Trichloroethene	18.	J
124-48-1	Dibromochloromethane	25.	ן טן
79-00-5	1,1,2-Trichloroethane	25.	ן ט
71-43-2	Benzene	25.	105 l
10061-02-6	Trans-1,3-Dichloropropene	25.	ו טו
75-25-2	Bromoform	25.	ט ו
108-10-1	4-Methyl-2-Pentanone	50.	lu l
591-78-6	2-Hexanone	50.	lu l
127-18-4	Tetrachlorcethene	630.	1
79-34-5	1,1,2,2-Tetrachloroethane	25.	ַ ט
108-88-3	Toluene	25.	Zū
108-90-7	Chlorobenzene	25.	ŭΙ
100-41-4	Ethylbenzene	25.	v
100-42-5	Styrene	25.	U
1220-20-7-	Xylene(total)	25.	ا لم تا

# VOLATELE ORGANICS ANALYSIS DATA SHEET TENATIVELY IDENTIFIED COMPOUNDS

Contract:

Lab Name: PACE

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

00177

Matrix: (soil/water) WATER

Lab Sample ID: 3285.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3009 5 19 11

Date Received: 5/8/91 /: 3/11

EPA SAMPLE NO.

(low/med) LOW Level:

Date Analyzed: 5/21/91

% Moisture: not dec.100.

Dilution Factor: 5.00

Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
======================================			=======================================	-   ====
1		-		-
2		-		-
3		-		-
5.				
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A SAMPLE NO. S3-10

Lab Name: PACE Contract:

Lab Code: PACE SDG No.: Case No.: EPC SAS No.:

Lab Sample ID: 3340.90185 Matrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3058

10061-01-5----cis-1,3-Dichloropropene

79-00-5----1,1,2-Trichloroethane

10061-02-6----Trans-1, 3-Dichloropropene

79-34-5----1,1,2,2-Tetrachloroethane

124-48-1-----Dibromochloromethane

108-10-1----4-Methyl-2-Pentanone

127-18-4----Tetrachloroethene

108-90-7-----Chlorobenzene

79-01-6----Trichloroethene

71-43-2----Benzene

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75-25-2----Bromoform

591-78-6----2-Hexanone

108-88-3----Toluene

100-42-5----Styrene

5/10/91 156 Date Received: 5/-9/91 16:3 1 Level: (low/med) LOW

Date Analyzed: 5/23/91 

.Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L 74-87-3-----Chloromethane 10. U 74-83-9----Bromomethane 10. U U 75-01-4-----Vinyl Chloride 10. 75-00-3-----Chloroethane U 10. U 75-09-2----Methylene Chloride 5. 67-64-1----Acetone U 10. 5. 75-15-0-----Carbon Disulfide U 75-35-4----1,1-Dichloroethene 5. U 75-34-3----1,1-Dichloroethane 540-59-0----1,2-Dichloroethene (total) U 5. U 5. 67-66-3-----Chloroform U 5. 107-06-2----1,2-Dichloroethane\_ 5. U 78-93-3----2-Butanone <del>u</del>-R 10. 71-55-6----1,1,1-Trichloroethane 5. U 56-23-5----Carbon Tetrachloride 5. U 108-05-4-----Vinyl Acetate U 10. 75-27-4----Bromodichloromethane U 5. 78-87-5----1,2-Dichloropropane 5. U

100-41-4----Ethylbenzene\_ 5. U 5. U 1330-20-7-----Xylene(total) \_ U , 5.

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#### 1E VOLATALE ORGANICS ANALYSIS DATA SHEET TENATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S3-1C-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

fatrix: (soil/water) WATER

Lab Sample ID: 3340.9 00186

Level: (low/med) LOW

.Sample wt/vol:

5. (g/mL) ML

Lab File ID: G3058
5/10/91 10/3/91
Date Received: 5/-9/91 10/3/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1:				
3. 4. 5.				
6. 7. 8.				
10:				
11. 12. 13.				
14. 15. 16.				
17. 18.				
21.				
22.				
26.				
27. 28. 29.				
30.				

FORM I VOA-TIC

PA SAMPLE NO. S3-11

Contract: Lab Name: PACE

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

00191 Lab Sample ID: 3353.0 Matrix: (soil/water) WATER

5. (g/mL) ML Sample wt/vol:

Lab File ID: G3050 5/10/91 10 3 41 Date Received: Level: (low/med) LOW

t Moisture: not dec.100. Date Analyzed: 5/22/91

.Column: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

	, ,,		
	Chloromethane	100.	U
	Bromomethane	100.	1 -
75-01-4	Vinyl Chloride	100.	ַט
75-00-3	Chloroethane	100.	ַט
75-09-2	Methylene Chloride	50.	ַ
67-64-1	Acetone	100.	U
	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
	2-Butanone	100.	U-R
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	ַ
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	50.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	Ŭ
71-43-2	Benzene	50.	UJ
10061-02-6	Trans-1,3-Dichloropropene	50.	ע <u></u>
75-25-2	Bromoform	50.	ט
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachlorcethene	910.	
	1,1,2,2-Tetrachloroethane	50.	טו
108-88-3	Toluene	50.	UJ
108-90-7	Chlorobenzene	50.	ו טו
100-41-4	Ethylbenzene	50.	ען מ
100-42-5	Styrene	50.	ا تا
1330-20-7	Xylene(total)	50.	لـ تا
	ng tene ( cocat)	]	1
		l	l

#### 1E VOLATILE ORGANICS ANALYSIS DATA SHEET TE ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. حد1-s3

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab File ID: G3050

00192

Sample wt/vol:

5. (g/mL) ML

Date Received: 5/11/91 Ex. Date Received: 5/10/91 10/3/91

Level: (low/med) LOW

Date Analyzed: 5/22/91

Lab Sample ID: 3353.0

% Moisture: not dec.100.

Dilution Factor: 10.00

Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q ====
2:				
4:				
5				
8				
10:				
12:				
14:				
15.				
17.				
19.				
21.				
23.				
25. 26. 27.				
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FORM I VOA-TIC

S3-12

Lab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3369.4197

ample wt/vol: 5. (g/mL) ML Lab File ID: G3060

Level: (low/med) LOW Date Received: 5/11/91

Moisture: not dec.100. Date Analyzed: 5/23/91

Column: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

74-87-3Chloromethane	100.	ן ט
74-83-9Bromomethane	100.	υ
75-01-4Vinyl Chloride	100.	ן ט
75-00-3Chloroethane	100.	ן ט
75-09-2Methylene Chloride	50.	ט
67-64-1Acetone	100.	ប
75-15-0Carbon Disulfide	50.	ן ט
75-35-41,1-Dichloroethene	50.	ט
75-34-31,1-Dichloroethane	50.	ט
540-59-01,2-Dichloroethene (total)	50.	U
67-66-3Chloroform	50.	ן ט
107-06-21,2-Dichloroethane	50.	ע
78-93-32-Butanone	<del>100</del>	t <del>u</del> r l
71-55-61,1,1-Trichloroethane	50.	ט ``
56-23-5Carbon Tetrachloride	50.	ט
108-05-4Vinyl Acetate	100.	ן ט
75-27-4Bromodichloromethane	50.	ן ט
78-87-51,2-Dichloropropane	50.	ប
10061-01-5cis-1,3-Dichloropropene	50.	ן ט
79-01-6Trichloroethene	50.	บ [
124-48-1Dibromochloromethane	50.	U
79-00-51,1,2-Trichloroethane	50.	ט _ [
71-43-2Benzene	50.	UJ
10061-02-6Trans-1,3-Dichloropropene	50.	บ
75-25-2Bromoform	50.	ប
108-10-14-Methyl-2-Pentanone	100.	<b>ט</b>
591-78-62-Hexanone	100.	ט
127-18-4Tetrachloroethene	930.	1
79-34-51,1,2,2-Tetrachloroethane	50.	<b>ט</b>
108-88-3Toluene	50.	UJ
108-90-7Chlorobenzene	50.	U
100-41-4Ethylbenzene	50.	ע \
100-42-5Styrene	50.	ט \
1330-20-7Xylene(total)	50.	UL
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#### 1E VOLATILE ORGANICS ANALYSIS DATA SHEET TELENTIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S3-12-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3365.40198

Sample wt/vol:

5. (g/mL) ML

Lab File ID: G3060

Level: (low/med) LOW

\* & Moisture: not dec.100.

Date Received: 5/11/91 Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1		_		<b> </b>
2.				
5				
7:				
9:				
11:				
12.				
14.				
15.				
18.				
20				
22:				
24.				
26.				-
28.				
29.				

FORM I VOA-TIC

A SAMPLE NO. 53-13

Lab Name: PACE

Contract:

SAS No.:00203 SDG No.: Case No.: EPC Lab Code: PACE

14/

Matrix: (soil/water) WATER

Lab Sample ID: 3459.6

'Sample wt/vol:

5. (g/mL) ML

COMPOUND

Lab File ID: G3063

Level: (low/med) LOW

CAS NO.

Date Received: 5/12/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor:

10.00

Q

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

gr	10,
$\mathcal{K}^{\vee'}$	61

		1
74-87-3Chloromethane	100.	U
74-83-9Bromomethane	100.	U
75-01-4Vinyl Chloride	100.	ט
75-00-3Chloroethane	100.	U
75-09-2Methylene Chloride	50.	ַט
67-64-1Acetone	100.	U
75-15-0Carbon Disulfide	50.	U
75-35-41,1-Dichloroethene	50.	U
75-34-31,1-Dichloroethane	50.	ט
540-59-01,2-Dichloroethene (total)	50.	U
67-66-3Chloroform	50.	ับ
107-06-21,2-Dichloroethane	50.	U
78-93-32-Butanone	100.	UR
71-55-61,1,1-Trichloroethane	50.	ט '`
56-23-5Carbon Tetrachloride	50.	U
108-05-4Vinyl Acetate	100.	U
75-27-4Bromodichloromethane	50.	U
78-87-51,2-Dichloropropane	50.	ט
10061-01-5cis-1,3-Dichloropropene	50.	U
79-01-6Trichloroethene	50.	U
124-48-1Dibromochloromethane	50.	U
79-00-51,1,2-Trichloroethane	50.	U
71-43-2Benzene	50.	105
L0061-02-6Trans-1,3-Dichloropropene	50.	U
75-25-2Bromoform	50.	U
108-10-14-Methyl-2-Pentanone	100.	U
591-78-62-Hexanone	100.	טן
127-18-4Tetrachloroethene	840.	i
79-34-51,1,2,2-Tetrachloroethane	50.	U
108-88-3Toluene	50.	UJ
108-90-7Chlorobenzene	50.	ען מן
100-41-4Ethylbenzene	50.	ט ו
100-42-5Styrene	50.	ן מ
1330-20-7Xvlene(total)	50.	[v ]
1330-20-7Xylene(total)		Ŭ -

#### 1E VOLATILE ORGANICS ANALYSIS DATA SHEET TELATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC SAS No.:

0020<sup>SDG</sup> No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3459.6

Sample wt/vol:

5. (g/mL) ML

: Level:

Lab File ID: G3063

(low/med) LOW

Date Received: 5/12/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q ====
1		_		
3.				
5				
8:				
10:				
12:				
13.				
15.		-		
18.		_		
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21		-		
24.				
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FORM I VOA-TIC

PA SAMPLE NO. S3-14

Contract: Lab Name: PACE

0020sbg No.: Case No.: EPC SAS No.: Lab Code: PACE

Lab Sample ID: 3475.8 Matrix: (soil/water) WATER

Lab File ID: G3086 5. (g/mL) ML Sample wt/vol:

5/14/91 EKd Date Received: 5/13/91 10/5/11 Level: (low/med) LOW

CONCENTRATION UNITS:

Date Analyzed: 5/23/91 % Moisture: not dec.100.

Dilution Factor: 10.00 Column: (pack/cap) PACK

74-87-3Chloromethane 74-83-9Bromomethane 75-01-4Vinyl Chloride 75-00-3Chloroethane 75-09-2Methylene Chlor 67-64-1	ide e ene ane ene (total) ane ethane oride thane pane opropene		100. 100. 100. 100. 50. 50. 50. 50. 50. 50. 50. 50. 50.	ממממת מממממממממממממממממממממממ
74-83-9Bromomethane 75-01-4Vinyl Chloride 75-00-3Chloroethane 75-09-2Methylene Chlor 67-64-1Acetone 75-15-0Carbon Disulfid 75-35-41,1-Dichloroeth 75-34-31,2-Dichloroeth 67-66-3Chloroform 107-06-21,2-Dichloroeth 78-93-32-Butanone 71-55-61,1-Trichloro 56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5	ide e ene ane ene (total) ane ethane oride thane pane opropene		100. 100. 100. 50. 100. 50. 50. 50. 50. 100. 50. 50. 50.	ממממ ב מממממממ מממממממ א
75-01-4Vinyl Chloride_ 75-00-3Chloroethane 75-09-2Methylene Chlor 67-64-1Acetone 75-15-0Carbon Disulfid 75-35-41,1-Dichloroeth 75-34-31,2-Dichloroeth 67-66-3Chloroform 107-06-21,2-Dichloroeth 78-93-32-Butanone 71-55-61,1,1-Trichloro 56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5	ide e ene ane ene (total) ane ethane oride thane pane opropene		100. 50. 50. 50. 50. 50. 50. 50. 100. 50. 50. 50.	ממממ ב מממממממ ב א
75-00-3Chloroethane 75-09-2Methylene Chlor 67-64-1Acetone 75-15-0Carbon Disulfid 75-35-41,1-Dichloroeth 75-34-31,2-Dichloroeth 540-59-01,2-Dichloroeth 67-66-3Chloroform 107-06-21,2-Dichloroeth 78-93-32-Butanone 71-55-61,1,1-Trichloro 56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5tis-1,3-Dichlor 79-01-6Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl	ide e ene ane ene (total) ane ethane oride thane pane opropene		100. 50. 50. 50. 50. 50. 50. 50. 100. 50. 50. 50.	ממממ מממממממ ממ
75-09-2Methylene Chlor 67-64-1Acetone 75-15-0	e_ene_ane_ene (total) ane_ethane oride_thane pane_opropene		100. 50. 50. 50. 50. 50. 400. 100. 50. 50.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
67-64-1	e_ene_ane_ene (total) ane_ethane oride_thane pane_opropene		50. 50. 50. 50. 50. 100. 100. 50.	00000000000000000000000000000000000000
75-35-41,1-Dichloroeth 75-34-31,1-Dichloroeth 540-59-01,2-Dichloroeth 67-66-3	ene ane ene (total) ane ethane oride thane pane opropene		50. 50. 50. 50. 50. 100. 50. 50.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
75-34-31,1-Dichloroeth 540-59-01,2-Dichloroeth 67-66-3Chloroform 107-06-21,2-Dichloroeth 78-93-32-Butanone 71-55-61,1,1-Trichloro 56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5tis-1,3-Dichlor 79-01-6Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	ane_ene (total) ane_ethane oride_ thane pane opropene		50. 50. 50. 50. 100. 50. 50.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
75-34-31,1-Dichloroeth 540-59-01,2-Dichloroeth 67-66-3Chloroform 107-06-21,2-Dichloroeth 78-93-32-Butanone 71-55-61,1,1-Trichloro 56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5tis-1,3-Dichlor 79-01-6Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	ane_ene (total) ane_ethane oride_ thane pane opropene		50. 50. 50. 100. 38. 50. 100. 50.	ממממ ה ה ה ה ה ה ה ה ה ה ה ה ה ה ה ה ה
67-66-3Chloroform  107-06-21,2-Dichloroeth  78-93-32-Butanone  71-55-61,1,1-Trichloro  56-23-5Carbon Tetrachl  108-05-4Vinyl Acetate  75-27-4Bromodichlorome  78-87-51,2-Dichloropro  10061-01-5tis-1,3-Dichlor  79-01-6Trichloroethene  124-48-1Dibromochlorome  79-00-51,1,2-Trichloro  71-43-2Benzene  10061-02-6Trans-1,3-Dichl	ethane oride thane pane opropene		50. 50. 100. 38. 50. 100. 50.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
67-66-3Chloroform 107-06-21,2-Dichloroeth 78-93-32-Butanone 71-55-61,1,1-Trichloro 56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5tis-1,3-Dichlor 79-01-6Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl	ethane oride thane pane opropene		50. 100. 38. 50. 100. 50. 50.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
78-93-32-Butanone 71-55-61,1,1-Trichloro 56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	ethane oride thane pane opropene		100. 38. 50. 100. 50.	ט ט ט ט ט
78-93-32-Butanone 71-55-61,1,1-Trichloro 56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	ethane oride thane pane opropene		38. 50. 100. 50.	J U U U
71-55-61,1,1-Trichloro 56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	oride thane pane opropene		50. 100. 50. 50.	บ บ บ
56-23-5Carbon Tetrachl 108-05-4Vinyl Acetate 75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	oride thane pane opropene		100. 50. 50.	ם מ
108-05-4Vinyl Acetate	thane pane opropene		50. 50.	U
75-27-4Bromodichlorome 78-87-51,2-Dichloropro 10061-01-5cis-1,3-Dichlor 79-01-6Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	pane opropene		50.	บ
10061-01-5cis-1,3-Dichlor 79-01-6Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	opropene			_
79-01-6Trichloroethene 124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform			50.	lvv
124-48-1Dibromochlorome 79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform		<del></del>	<b>50.</b>	יטן
79-00-51,1,2-Trichloro 71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform			37.	J
71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	thane		50.	ט
71-43-2Benzene 10061-02-6Trans-1,3-Dichl 75-25-2Bromoform	ethane	{	50.	ַ ט
75-25-2Bromoform	<del></del>		50.	UJ
75-25-2Bromoform 108-10-14-Methyl-2-Pent	oropropene		50.	U
108-10-14-Methvl-2-Pent	• -		50.	U
	anone		100.	U
591-78-62-Hexanone		i	100.	U
127-18-4 Tetrachloroethe	ne	_	1200.	
79-34-51,1,2,2-Tetrach	loroethane		50.	U
108-88-3Toluene	•	_	50.	UJ
108-90-7Chlorobenzene			50.	U
100-41-4Ethylbenzene		_	50.	ן ט
100-42-5Styrene			50.	U
1330-20-7Xylene(total)		<del></del>	50.	المال

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## VOLATALE ORGANICS ANALYSIS DATA SHEET TELESTIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S3-14-

Lab Name: PACE "

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

00210 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3475.8

. Sample wt/vol:

5. (g/mL) ML

Lab File ID: G3086
5/14/91 EFA
Date Received: 5713/91 10/3/11

Level: (low/med) LOW

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q ====
1.				
2				
3		\		
5.				
6		_		
7.		—   <del></del>		
9				
10.				
11.			<u></u>	
13. I				
14.				
15.		—  <del></del>		
4/•				
10.				
20				
4 <del>4</del> •				
22.				
23		-		
25.				
26				
6 / •				
29.				
30.				
		. 1 . 1.	J	

FORM I VOA-TIC

A SAMPLE NO. S3-15

Lab Name: PACE Contract:

00217 SDG No.: Lab Code: PACE Case No.: EPC SAS No.:

Lab Sample ID: 3502.9 Matrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3138  $\frac{5/15^{1/6}}{5/14/91} \text{ Exc.}$ Date Received:  $\frac{5}{14/91} \frac{10}{10/3} \frac{3}{10}$ Level: (low/med) LOW

Date Analyzed: 5/27/91 t Moisture: not dec.100.

Dilution Factor: 10.00 Column: (pack/cap) PACK

CONCENTRATION UNITS:

•		001.021.214.220 01.220	
CAS NO.	COMPOUND	(ug/L or ug/Kg) $VG/L$	Q

	<del></del>	
74-87-3Chloromethane	100.	ט
74-83-9Bromomethane	100.	U
75-01-4Vinyl Chloride	100.	U
75-00-3Chloroethane	100.	U
75-09-2Methylene Chloride	50.	U
67-64-1Acetone	100.	U
75-15-0Carbon Disulfide	50.	U
75-35-41,1-Dichloroethene	50.	U
75-34-31,1-Dichloroethane	50.	U
540-59-01,2-Dichloroethene (total)	50.	U
67-66-3Chloroform	50.	U
107-06-21,2-Dichloroethane	50.	U
78-93-32-Butanone	<del>100.</del>	UR
71-55-61,1,1-Trichloroethane	50.	U
56-23-5Carbon Tetrachloride	50.	U
108-05-4Vinyl Acetate	100.	U
75-27-4Bromodichloromethane	50.	U
78-87-51,2-Dichloropropane	50.	U
10061-01-5cis-1,3-Dichloropropene	50.	บ
79-01-6Trichloroethene	50.	U
124-48-1Dibromochloromethane	50.	ט
79-00-51,1,2-Trichloroethane	50.	ַ ט
71-43-2Benzene	50.	UJ
10061-02-6Trans-1,3-Dichloropropene	50.	U
75-25-2Bromoform	50.	U
108-10-14-Methyl-2-Pentanone	100.	U
591-78-62-Hexanone	100.	ט
127-18-4Tetrachloroethene	1200.	
79-34-51,1,2,2-Tetrachloroethane	50.	_ ט
108-88-3Toluene	50.	נט
108-90-7Chlorobenzene	50.	ע \
100-41-4Ethylbenzene	50.	ע \
100-42-5Styrene	50.	ט
1330-20-7Xylene(total)	50.	الرن



## VOLATULE ORGANICS ANALYSIS DATA SHEET TEN ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S3-15-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

00218

fatrix: (soil/water) WATER

Lab Sample ID: 3502.9

Sample wt/vol:

5. (g/mL) ML

\_\_evel: (low/med) LOW

Lab File ID: G3138 Date Received:  $\frac{5}{14/91}$   $|\nu|^3/9'$ 

% Moisture: not dec.100.

Number TICs found:

Date Analyzed: 5/27/91

'Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	===
1		_		
3				
4				
5				_
7				
8.		_		
0.				
2				
J• 1				
4		_		
·				
7.		-		
J• (				
0		-		
2				
3		-		
5				
6				
7				
J•				
0		_		

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FORM I VOA-TIC

PA SAMPLE NO. S3-16

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3601.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2711

Date Received: 5/14/91 (L)3/91 Level: (low/med) LOW

: Moisture: not dec.100. Date Analyzed: 5/25/91

Column: (pack/cap) PACK Dilution Factor: 1.00

		CONCENTRATION			w,
CAS NO.	COMPOUND	(ug/L or ug/K	g) UG/L	Q 	Wx/4
	Chloromethane		10.	U	
	Bromomethane		10.	U	1
75-01-4	Vinyl Chloride		10.	U	
	Chloroethane		10.	U	
75-09-2	Methylene Chloride	2	5.	U	
	Acetone		10.	ן ט	İ
	Carbon Disulfide		5.	ט	1
75-35-4	1,1-Dichloroethene		5.	U	
75-34-3	1,1-Dichloroethane	;	5.	טן	ł
540-59-0	1,2-Dichloroethene	(total)	3.	J	1
	Chloroform	·	5.	U	<b>{</b>
107-06-2	1,2-Dichloroethane		5.	טן	
78-93-3	2-Butanone		10.	U	1
71-55-6	1,1,1-Trichloroeth	nane	5.	ַט	ļ
56-23-5	Carbon Tetrachlori	de	5.	U	ł
108-05-4	Vinyl Acetate		10.	U	
75-27-4	Bromodichlorometha	ne	5.	ן ט	
78-87-5	1,2-Dichloropropar	ne ———	5.	U	Į
10061-01-5	cis-1,3-Dichloropi	opene	5.	שׁ	
	Trichloroethene		3.	J	
	Dibromochlorometha	ne	5.	บ	1
79-00-5	1,1,2-Trichloroeth	ane	5.	U	
71-43-2	Benzene		5.	UJ	1
10061-02-6	Trans-1, 3-Dichlord	propene	5.	บั	]
75-25-2	Bromoform		5.	U	
108-10-1	4-Methyl-2-Pentance	ne	10.	U	İ
591-78-6	2-Hexanone		10.	ΙŪ Ι	İ
127-18-4	Tetrachloroethene		13C.	1	}
	1,1,2,2-Tetrachlor	oethane	5.	ן ט	
108-88-3	Toluene		5.	<u>02</u>	j
108-90-7	Chlorobenzene		5.	וטו	
100-41-4	Ethylbenzene	<del></del>	5.	ŭ	
100-42-5	Styrono		5.	ע	
1330-20-7	Xylene (total)		5.		
1330-20-7	xyrene (total)		J.		
l	·			I ——— I	l

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## VOLATLE ORGANICS ANALYSIS DATA SHEET TELEMETTELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S3-10-

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

00226

Matrix: (soil/water) WATER

Lab Sample ID: 3601.7

Sample wt/vol:

5. (g/mL) ML

Lab File ID: J2711

Date Received:  $\frac{5/14/91}{5/14/91} \frac{1}{|\upsilon|^3}$ 

Level: (low/med) LOW

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Dilution Factor: 1.00

Column: (pack/cap) PACK

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
1				
2.		_		<b> </b>
3.4.				
5				
0				
7.		— [ <del></del>		
y. :				
TO.				
11.				
T).				
14.				
15.		_		
⊥/•				
10.				
50.		_		
41.		_		
		-		
24.		_		
40• I				
		_		
28.		-		
30.				

FORM I VOA-TIC

A SAMPLE NO. S3-17

Lab Name: PACE Contract:

00233<sub>DG No.:</sub> ab Code: PACE Case No.: EPC SAS No.:

Lab Sample ID: 3613.0 Matrix: (soil/water) WATER

ample wt/vol: 5. (g/mL) ML

Lab File ID: G3137
5/17/91 11 0/3/11
Date Received: 5/16/91 Level: (low/med) LOW

Date Analyzed: 5/27/91 Moisture: not dec.100.

Column: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

74-87-3Chloromethane 74-83-9Bromomethane 75-01-4Vinyl Chloride 75-00-3Chloroethane 75-09-2Methylene Chloride 67-64-1Acetone	100. 100. 100. 50. 100.	ם ם ם ם
74-83-9Bromomethane 75-01-4Vinyl Chloride 75-00-3Chloroethane 75-09-2Methylene Chloride 67-64-1Acetone	100. 100. 50. 100.	Ü
75-00-3Chloroethane 75-09-2Methylene Chloride 67-64-1Acetone	100. 50. 100.	Ū
75-00-3Chloroethane 75-09-2Methylene Chloride 67-64-1Acetone	50. 100.	-
67-64-1Acetone	100.	שׁ
67-64-1Acetone		
		U
75-15-0Carbon Disulfide	50.	U
75-35-41,1-Dichloroethene	50.	U
75-34-31,1-Dichloroethane	50.	U
540-59-01,2-Dichloroethene (total)	50.	U
67-66-3Chloroform	50.	U
107-06-21,2-Dichloroethane	50.	ט כ
78-93-32-Butanone	100.	<del>/U</del> K
71-55-61,1,1-Trichloroethane	50.	ט
56-23-5Carbon Tetrachloride	50.	U
108-05-4Vinyl Acetate	100.	ט
75-27-4Bromodichloromethane	50.	ט
78-87-51,2-Dichloropropane	50.	U
10061-01-5cis-1,3-Dichloropropene	50.	ט
79-01-6Trichloroethene	50.	U
124-48-1Dibromochloromethane	50.	ט
79-00-51,1,2-Trichloroethane	50.	ַ ט
71-43-2Benzene	50.	UJ
10061-02-6Trans-1,3-Dichloropropene	50.	U
75-25-2Bromoform	50.	טן
108-10-14-Methyl-2-Pentanone	100.	טן
591-78-62-Hexanone	100.	ט
127-18-4Tetrachloroethene	1200.	
79-34-51,1,2,2-Tetrachloroethane	50.	ט
108-88-3Toluene	50.	US
108-90-7Chlorobenzene	50.	וֹטוֹ
100-41-4Ethylbenzene	50.	<u>u</u> \
100-42-5Styrene	50.	lu \
1330-20-7Xylene(total)	50.	l <del>u</del> L
		-

#### VOLATLE ORGANICS ANALYSIS DATA SHEET ATIVELY IDENTIFIED COMPOUNDS

S3-17-

Lab Name: PACE

Contract:

 $00234^{1}$ 

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3613.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3137

Date Received: 5/16/91 10/3/3/

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EPA SAMPLE NO.

Level: (low/med) LOW

. % Moisture: not dec.100.

Date Analyzed: 5/27/91

Column: (pack/cap) PACK

Number TICs found: 0

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1				
3				
7:				
8. 9. 10.				
11.				
13. 14. 15.				
17.				
20.				
21. 22. 23.				
25.				
26. 27. 28.				
29.				

FORM I VOA-TIC

A SAMPLE NO. S3-18

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

00241<sub>SDG No.:</sub>

Matrix: (soil/water) WATER

Lab Sample ID: 3659.9

Sample wt/vol:

5. (g/mL) ML

Lab File ID: G3201

Level: (low/med) LOW

Date Received:

5/15/91 18 3 91 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

CAS NO. COMPOUND

Dilution Factor:

10.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

74-87-3Chloromethane       100. U         74-83-9Bromomethane       100. U         75-01-4Vinyl Chloride       100. U         75-00-3Chloroethane       100. U         75-09-2		<del>,</del>	<del></del>
74-83-9Bromomethane       100. U         75-01-4Vinyl Chloride       100. U         75-00-3	74-87-3Chloromethane	100.	ט
75-01-4Vinyl Chloride 100. U 75-00-3Chloroethane 100. U 75-09-2Methylene Chloride 50. U 67-64-1Acetone 100. U 75-15-0Carbon Disulfide 50. U 75-35-41,1-Dichloroethane 50. U 75-34-31,1-Dichloroethane 50. U 67-66-3		100.	ט
75-00-3		100.	U
75-09-2		100.	U
67-64-1Acetone 75-15-0Carbon Disulfide 75-35-41,1-Dichloroethene 75-34-31,1-Dichloroethane 50. U 540-59-01,2-Dichloroethane 107-06-21,2-Dichloroethane 71-55-61,1,1-Trichloroethane 71-55-61,1,1-Trichloroethane 71-55-6		50.	U
75-35-41,1-Dichloroethene 50. U 75-34-31,1-Dichloroethane 50. U 540-59-01,2-Dichloroethene (total) 50. U 67-66-3Chloroform 50. U 107-06-21,1-Trichloroethane 50. U 78-93-3		100.	ט
75-35-41,1-Dichloroethene 50. U 75-34-31,1-Dichloroethane 50. U 540-59-01,2-Dichloroethene (total) 50. U 67-66-3Chloroform 50. U 107-06-21,1-Trichloroethane 50. U 78-93-3	75-15-0Carbon Disulfide	50.	U
75-34-31,1-Dichloroethane       50.       U         540-59-01,2-Dichloroethene (total)       50.       U         67-66-3Chloroform       50.       U         107-06-21,2-Dichloroethane       50.       U         78-93-32-Butanone       100.       U         71-55-61,1,1-Trichloroethane       50.       U         56-23-5Carbon Tetrachloride       50.       U         108-05-4Vinyl Acetate       100.       U         75-27-4Bromodichloromethane       50.       U         75-27-4Bromodichloromethane       50.       U         78-87-51,2-Dichloropropane       50.       U         10061-01-5trichloroethene       50.       U         79-01-6Trichloroethene       50.       U         124-48-1Dibromochloromethane       50.       U         79-00-51,1,2-Trichloroethane       50.       U         10061-02-6Trans-1,3-Dichloropropene       50.       U         75-25-2Bromoform       50.       U         108-10-14-Methyl-2-Pentanone       100.       U         127-18-4Tetrachloroethene       50.       U         79-34-51,1,2,2-Tetrachloroethane       50.       U		50.	U
50. U 67-66-3	75-34-31,1-Dichloroethane	50.	U
107-66-3	540-59-01.2-Dichloroethene (total)	50.	ט
107-06-21,2-Dichloroethane	67-66-3Chloroform	50.	ט
71-55-61,1,1-Trichloroethane 50. U 56-23-5Carbon Tetrachloride 108-05-4Vinyl Acetate 75-27-4Bromodichloromethane 78-87-51,2-Dichloropropane 10061-01-5Cis-1,3-Dichloropropene 79-01-6Trichloroethene 124-48-1Dibromochloromethane 79-00-51,1,2-Trichloroethane 71-43-2Benzene 10061-02-6Trans-1,3-Dichloropropene 75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 127-18-4Tetrachloroethene 127-18-4Tetrachloroethene 108-88-3Toluene 108-90-7Chlorobenzene 100-41-4Ethylbenzene	107-06-21,2-Dichloroethane	50.	U
108-05-4	78-93-32-Butanone	_100	lu (
108-05-4Vinyl Acetate       100.       U         75-27-4Bromodichloromethane       50.       U         78-87-51,2-Dichloropropane       50.       U         10061-01-5cis-1,3-Dichloropropene       50.       U         79-01-6Trichloroethene       50.       U         124-48-1Dibromochloromethane       50.       U         79-00-51,1,2-Trichloroethane       50.       U         71-43-2Benzene       50.       U         10061-02-6Trans-1,3-Dichloropropene       50.       U         75-25-2Bromoform       50.       U         108-10-14-Methyl-2-Pentanone       100.       U         591-78-62-Hexanone       100.       U         127-18-4Tetrachloroethene       50.       U         79-34-51,1,2,2-Tetrachloroethane       50.       U         108-88-3Toluene       50.       U         108-90-7Chlorobenzene       50.       U         100-41-4Ethylbenzene       50.       U	71-55-61,1,1-Trichloroethane	50.	(U '
75-27-4Bromodichloromethane 78-87-51,2-Dichloropropane 50. U  10061-01-5cis-1,3-Dichloropropene 79-01-6Trichloroethene 124-48-1Dibromochloromethane 79-00-51,1,2-Trichloroethane 71-43-2Benzene 50. U  71-43-2Benzene 50. U  75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 100. U  591-78-62-Hexanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene 108-90-7Chlorobenzene 100-41-4Ethylbenzene 50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U	56-23-5Carbon Tetrachloride	50.	ט
78-87-51,2-Dichloropropane 50. U  10061-01-5cis-1,3-Dichloropropene 50. U  79-01-6Trichloroethene 50. U  124-48-1Dibromochloromethane 50. U  79-00-51,1,2-Trichloroethane 50. U  71-43-2Benzene 50. U  1061-02-6Trans-1,3-Dichloropropene 50. U  75-25-2Bromoform 50. U  108-10-14-Methyl-2-Pentanone 100. U  591-78-62-Hexanone 100. U  127-18-4Tetrachloroethene 50. U  108-88-3Toluene 50. U  108-90-7Chlorobenzene 50. U  100-41-4Ethylbenzene 50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U		100.	ט
78-87-51,2-Dichloropropane 50. U  10061-01-5cis-1,3-Dichloropropene 50. U  79-01-6Trichloroethene 50. U  124-48-1Dibromochloromethane 50. U  79-00-51,1,2-Trichloroethane 50. U  71-43-2Benzene 50. U  1061-02-6Trans-1,3-Dichloropropene 50. U  75-25-2Bromoform 50. U  108-10-14-Methyl-2-Pentanone 100. U  591-78-62-Hexanone 100. U  127-18-4Tetrachloroethene 50. U  108-88-3Toluene 50. U  108-90-7Chlorobenzene 50. U  100-41-4Ethylbenzene 50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U  50. U	75-27-4Bromodichloromethane	50.	ט
10061-01-5cis-1,3-Dichloropropene 50. U 79-01-6Trichloroethene 50. U 124-48-1Dibromochloromethane 50. U 79-00-51,1,2-Trichloroethane 50. U 71-43-2Benzene 50. U 10061-02-6Trans-1,3-Dichloropropene 50. U 108-10-14-Methyl-2-Pentanone 100. U 1991-78-62-Hexanone 100. U 127-18-4Tetrachloroethene 50. U 108-88-3Toluene 50. U 108-90-7Chlorobenzene 50. U 109-41-4Ethylbenzene 50. U	78-87-51,2-Dichloropropane	50.	U
79-01-6Trichloroethene 124-48-1Dibromochloromethane 79-00-51,1,2-Trichloroethane 71-43-2Benzene 10061-02-6Trans-1,3-Dichloropropene 75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 109-178-62-Hexanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene 108-90-7Chlorobenzene 100-41-4Ethylbenzene 50. U 120		50.	Ū
79-00-51,1,2-Trichloroethane 71-43-2Benzene 10061-02-6Trans-1,3-Dichloropropene 75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene 108-90-7Chlorobenzene 100-41-4Ethylbenzene 50. U U U U U U U U U U U U U U U U U U U	79-01-6Trichloroethene	50.	U
79-00-51,1,2-Trichloroethane 71-43-2Benzene 10061-02-6Trans-1,3-Dichloropropene 75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene 108-90-7Chlorobenzene 100-41-4Ethylbenzene 50. U 170. U 120. U 50. U 50. U 50. U 50. U 50. U	124-48-1Dibromochloromethane		Ü
71-43-2Benzene  10061-02-6Trans-1,3-Dichloropropene  75-25-2Bromoform  108-10-14-Methyl-2-Pentanone  50. U  109-10-14-Methyl-2-Pentanone  100. U  127-18-4Tetrachloroethene  79-34-51,1,2,2-Tetrachloroethane  108-88-3Toluene  108-90-7Chlorobenzene  100-41-4Ethylbenzene  50. U  50. U  50. U  50. U  50. U			
10061-02-6Trans-1,3-Dichloropropene       50.       U         75-25-2Bromoform       50.       U         108-10-14-Methyl-2-Pentanone       100.       U         591-78-62-Hexanone       100.       U         127-18-4Tetrachloroethene       1200.       U         79-34-51,1,2,2-Tetrachloroethane       50.       U         108-88-3Toluene       50.       U         108-90-7Chlorobenzene       50.       U         100-41-4Ethylbenzene       50.       U	71-43-2Benzene		
75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 591-78-62-Hexanone 127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 108-88-3Toluene 108-90-7Chlorobenzene 100-41-4Ethylbenzene 50. U 50. U 50. U 50. U 50. U 50. U	10061-02-6Trans-1.3-Dichloropropene		1 -
108-10-14-Methyl-2-Pentanone 100. U 591-78-62-Hexanone 100. U 127-18-4Tetrachloroethene 50. U 108-88-3Toluene 50. U 108-90-7Chlorobenzene 50. U 100-41-4Ethylbenzene 50. U	75-25-2Bromoform		-
591-78-62-Hexanone 100. U  127-18-4Tetrachloroethene 50. U  108-88-3Toluene 50. U  108-90-7Chlorobenzene 50. U  100-41-4Ethylbenzene 50. U			1 ~
127-18-4Tetrachloroethene 79-34-51,1,2,2-Tetrachloroethane 50. U 108-88-3Toluene 50. U 108-90-7Chlorobenzene 50. U 100-41-4Ethylbenzene 50. U	591-78-62-Hexanone		f -
79-34-51,1,2,2-Tetrachloroethane 50. U 108-88-3Toluene 50. U 108-90-7Chlorobenzene 50. U 100-41-4Ethylbenzene 50. U	127-18-4Tetrachloroethene		1
108-88-3Toluene 50. U 50.	79-34-51.1.2.2-Tetrachloroethane		117
108-90-7Chlorobenzene 50. U 100-41-4Ethylbenzene 50. U	108-88-3Toluene		
100-41-4Ethylbenzene 50. U	108-90-7Chlorobenzene	• • • •	1
	100-41-4Ethylbenzene		1 - 1
100-42-5Styrene 50. U	100-42-5Styrene		-
1330-20-7Xylene(total) 50. U	1330-20-7Xylene(total)		
30.	injanino ( conda)	50.	

#### 1E VOLATE ORGANICS ANALYSIS DATA SHEET TEN TIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S3-18-

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

00242 Lab Sample ID: 3659.9

Sample wt/vol:

5. (g/mL) ML

Lab File ID: G3201

Level:

(low/med) LOW

Date Received:

5/17/91 LLJ 10/3/91

% % Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor:

10.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2.				
3				
4.		_		<b> </b>
5		_		<u> </u>
6		-		
7.		_		
9.				
10.				
TT+		_		
12		-	<del></del>	
14		-		
15.				
16.				
17.		_		
18.		-		
19.		-		
21. j				
22.				
23.				
24.		_		
29 <b>.</b> ]		- [		
26.		-		
20.		-		
69•				
30				
		_		

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FORM I VOA-TIC

A SAMPLE NO. S3-19

\_ab Name: PACE Contract:

00249sdg No.: ab Code: PACE Case No.: EPC SAS No.:

Lab Sample ID: 3671.8 Matrix: (soil/water) WATER

ample wt/vol: 5. (g/mL) ML Lab File ID: G3205

Date Received: 5/18/91 Level: (low/med) LOW

Date Analyzed: 5/29/91 Moisture: not dec.100.

Dilution Factor: 10.00 Column: (pack/cap) PACK

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

\	<del> </del>	
74-87-3Chloromethane	100.	ט
74-83-9Bromomethane	100.	ŭ
75-01-4Vinyl Chloride	100.	U
75-00-3Chloroethane	100.	ប្រ
75-09-2Methylene Chloride	50.	lŭ l
67-64-1Acetone	100.	ן ע
75-15-0Carbon Disulfide	50.	Ū
75-35-41,1-Dichloroethene	50.	υ
75-34-31,1-Dichloroethane	50.	บั
540-59-01,2-Dichloroethene (total)	50.	lŭ l
67-66-3Chloroform	50.	ן ט
107-06-21,2-Dichloroethane	50.	ן ט
78-93-32-Butanone	-100	<del>u</del> - P
71-55-61,1,1-Trichloroethane	50.	Ū 🗀
56-23-5Carbon Tetrachloride	50.	Ü
108-05-4Vinyl Acetate	100.	ו ט
75-27-4Bromodichloromethane	50.	Ū
78-87-51,2-Dichloropropane	50.	υ
10061-01-5cis-1,3-Dichloropropene	50.	ا تا
79-01-6Trichloroethene	57.	
124-48-1Dibromochloromethane	50.	ט ו
79-00-51,1,2-Trichloroethane	50.	Ŭ
71-43-2Benzene	50.	UJ
10061-02-6Trans-1, 3-Dichloropropene	50.	บั
75-25-2Bromoform	50.	ן ט
108-10-14-Methyl-2-Pentanone	100.	υ
591-78-62-Hexanone	100.	ו ו
127-18-4Tetrachloroethere	1600.	]
79-34-51,1,2,2-Tetrachloroethane	50.	ן ט
108-88-3Toluene	50.	υJ
108-90-7Chlorobenzene	50.	บัง
100-41-4Ethylbenzene	50.	ע \
100-42-5Styrene	50.	Ū \
1330-20-7Xylene(total)	50.	U-1
		· ———

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# VOLATE ORGANICS ANALYSIS DATA SHEET TENETIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

\_ab Name: PACE

Contract:

S3-19-

'ab Code: PACE Case No.: EPC SAS No.: 00250 SDG No.:

matrix: (soil/water) WATER

Lab Sample ID: 3671.8

ample wt/vol: 5. (g/mL) ML

Lab File ID: G3205

Level: (low/med) LOW

Date Received: 5/18/91

Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2.		-		
"·		_		
5. 6.		-  -	<u>.</u>	
7.				
8.		-  -		
10.				
11.		-  -		
13.				
14.		-  -		
10.				
±/•		-     -		
18				
20.		-		
22.				
23.		-  -		
24				
20 I		-  -		
27.				
29. 30.		-  -		
30		-     -		

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PA SAMPLE NO. S3-20

Contract: Lab Name: PACE

ab Code: PACE Case No.: EPC SAS No.: 0025 SDG No.:

Lab Sample ID: 3731.5 Matrix: (soil/water) WATER

Lab File ID: J2814 lample wt/vol: 5. (g/mL) ML

5/19/11 L/2 3/41 Date Received: 5/16/91 Level: (low/med) LOW

Moisture: not dec.100. Date Analyzed: 5/31/91

10.00 Column: (pack/cap) PACK Dilution Factor:

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

74-87-3Chloromethane	100.	U
74-83-9Bromomethane	100.	Ū
75-01-4Vinyl Chloride	100.	Ū
75-00-3Chloroethane	100.	Ū
75-09-2Methylene Chloride	21.	J
67-64-1Acetone	100.	שׁ
75-15-0Carbon Disulfide	50.	Ū
75-35-41,1-Dichloroethene	50.	Ū
75-34-31,1-Dichloroethane	50.	ט
540-59-01,2-Dichloroethene (total)	13.	J
67-66-3Chloroform	50.	U
107-06-21,2-Dichloroethane	50.	Ü
78-93-32-Butanone	100.	Ū
71-55-61,1,1-Trichloroethane	41.	J
56-23-5Carbon Tetrachloride	50.	บ
108-05-4Vinyl Acetate	100.	ן ע
75-27-4Bromodichloromethane	50.	ן ט
78-87-51,2-Dichloropropane	50.	ΰ
10061-01-5cis-1,3-Dichloropropene	50.	Ŭ
79-01-6Trichloroethene	58.	ľ
124-48-1Dibromochloromethane	50.	ט
79-00-51,1,2-Trichloroethane	50.	Ü
71-43-2Benzene	50.	UJ
10061-02-6Trans-1,3-Dichloropropene	50.	ט ט
75-25-2Bromoform	50.	บ
108-10-14-Methyl-2-Pentanone	100.	ซ
591-78-62-Hexanone		Ü
127-18-4Tetrachloroethene	100. 1606.	ا
70-24-51 1 2 2 Metrochlere		**
79-34-51,1,2,2-Tetrachloroethane	50.	לם במ
108-88-3Toluene	50.	
108-90-7Chlorobenzene	50.	ן טַ
100-41-4Ethylbenzene	50.	ע
100-42-5Styrene	50.	U
1330-20-7Xylene (total)	50.	U +
·	<del></del>	

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#### LE ORGANICS ANALYSIS DATA SHEET ATIVELY IDENTIFIED COMPOUNDS

S3-23-

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

00250 Lab Sample ID: 3731.5

Sample wt/vol:

5. (g/mL) ML

Level: (low/med) LOW

% Moisture: not dec.100.

Date Analyzed: 5/31/91

Column: (pack/cap) PACK

Dilution Factor:

10.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
3.		_		<b> </b>
7				
5.				
7.		_		
9.				
10.				
12.				
13.				
15.		-		
1/.				
18.				
20		_		
22.				
23		-		
25		-		
<i>41</i> .				
29.		-[		
30.		_		

FORM I VOA-TIC

PA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

0026sbg No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3019.1

Sample wt/vol:

5. (g/mL) ML

Lab File ID: J2550

Level: (low/med) LOW

Date Received:

5/ 2/91 / 15/2

% Moisture: not dec.100.

Date Analyzed: 5/12/91

Column: (pack/cap) PACK

Dilution Factor:

1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

74-87-3	Chloromethane	10.	U
	Bromomethane	10.	U
	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	5.	U
67-64-1	Acetone	10.	שו
	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1.2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	บ
107-06-2	1,2-Dichloroethane	5.	U
	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5	HU-R
108-05-4	Vinyl Acetate	10.	n ,
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1.3-Dichloropropene	5.	U U
79-01-6	Trichloroethene	3.	J
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	บ
71-43-2	Benzene	5.	UJ
10061-02-6	Trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	ע
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethere	170.	
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	UJ
108-90-7	Chlorobenzene	5.	ט ו
100-41-4	Ethylbenzene	5.	υ \
100-42-5	Styrene	5.	ע \
1330-20-7	Xylene (total)	5.	للر تا

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# 1E LE ORGANICS ANALYSIS DATA SHEET ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC

SAS No.:

002sbg No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3019.1

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2550

Level: (low/med) LOW

Date Received:

5/1/91 LK ) 5/2/91 LK )

% Moisture: not dec.100.

Date Analyzed: 5/12/91

Number TICs found: 0

Dilution Factor:

1.00

Column: (pack/cap) PACK

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
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FORM I VOA-TIC

S4-2

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.00275 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3039.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2589

Level: (low/med) LOW Date Received: 5/ 1/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

. Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

	<del></del>	
74-87-3Chloromethane	10.	U
74-83-9Bromomethane	10.	ט
75-01-4Vinyl Chloride	10.	ט
75-00-3Chloroethane	10.	U
75-09-2Methylene Chloride	5.	ַ
67-64-1Acetone	10.	טו
75-15-0Carbon Disulfide	5.	U
75-35-41,1-Dichloroethene	5.	U
75-34-31,1-Dichloroethane	5.	ט
540-59-01,2-Dichloroethene (total)	5.	U
67-66-3Chloroform	5.	U
107-06-21,2-Dichloroethane	5.	ַ ט
78-93-32-Butanone	<del>10</del>	tu R
71-55-61,1,1-Trichloroethane	5.	U
56-23-5Carbon Tetrachloride	5.	U
108-05-4Vinyl Acetate	10.	U
75-27-4Bromodichloromethane	5.	U
78-87-51,2-Dichloropropane	5.	U
10061-01-5cis-1,3-Dichloropropene	5.	U
79-01-6Trichloroethene	3.	J
124-48-1Dibromochloromethane	5.	שׁו
79-00-51,1,2-Trichloroethane	5.	U
71-43-2Benzene	5.	UJ
10061-02-6Trans-1,3-Dichloropropene	5.	U
75-25-2Bromoform	5.	U
108-10-14-Methyl-2-Pentanone	10.	U
591-78-62-Hexanone	10.	U
127-18-4Totrachloroethene	9û.	i
79-34-51,1,2,2-Tetrachloroethane	5.	ט
108-88-3Toluene	1.	us
108-90-7Chlorobenzene	5.	ן ט
100-41-4Ethylbenzene	5.	U
100-42-5Styrene	5.	lŭ (
1330-20-7Xylene (total)	5.	UL

#### 1E VOLATALE ORGANICS ANALYSIS DATA SHEET TEX ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. S4-2 -

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC SAS No.:

0 8P2 78···

Matrix: (soil/water) WATER

Lab Sample ID: 3039.6

, Sample wt/vol:

5. (g/mL) ML

Lab File ID: J2589

- Level:

(low/med) LOW

Date Received: 5/2/91 21/3/91

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

0

Dilution Factor:

1.00

Number TICs found:

% Moisture: not dec.100.

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q ====
1:				
5				
7.				
9. 10. 11.				
13				
14. 15. 16.				
18				
21.				
23.				
26.				
29.				_
30				

FORM I VOA-TIC

S4-3

\_ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00283

'Matrix: (soil/water) WATER Lab Sample ID: 3130.9

ample wt/vol: 5. (g/mL) ML Lab File ID: G2906

Level: (low/med) LOW Date Received:  $\frac{3/3/71}{5/2/91}$ 

Moisture: not dec.100. Date Analyzed: 5/15/91

Column: (pack/cap) PACK Dilution Factor: 5.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

1		<del>,</del> ,
74-87-3	50. 50. 50. 50. 25. 25. 25. 25. 25. 25. 25. 25. 25. 25	
75-25-2Bromoform 108-10-14-Methyl-2-Pentanone 591-78-62-Hexanone	25. 50. 50.	U

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#### VOLATELE ORGANICS ANALYSIS DATA SHEET ATIVELY IDENTIFIED COMPOUNDS

S4-3 -

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

00284

Matrix: (soil/water) WATER

Lab Sample ID: 3130.9

Dilution Factor:

Sample wt/vol:

5. (g/mL) ML

Lab File ID: G2906

0/3/91

Date Received: 5/2/91 10/3/91

Level: (low/med) LOW

Number TICs found:

% Moisture: not dec.100.

Date Analyzed: 5/15/91

5.00

Column: (pack/cap) PACK

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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/ •				
8.				
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FORM I VOA-TIC



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/1/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. Positive methylene chloride, chloroform, and toluene results reported in Samples S1-4 and S1-4 DUP were qualified as less than the reported values. Detection limits for aromatic compounds were qualified as estimates. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Five samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 1, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-4 TB S1-4	3048 3049	05/01/91 05/01/91
S1-4 DUP	3059	05/01/91

## 1 = VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

	EPA	SAMPLE	NO.	
; -				;
	S1 -	-4DUP		:
١_				:

Lab Name: PACE

Contract:

SAS No.: SDG No.:

00039

Matrix: (soil/water) WATER

Lab Sample ID: 3050

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2512

Level: (low/med) LOW

Date Received: 5/ 2/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACk

Number TICs found: 0

Dilution Factor: 2.50

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

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#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated for all three samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met on 4/24/91 (Instrument J).

Initial calibration criteria were met on 5/6/91 (Instrument G) with with exception of the RF for 2-butanone (actual 0.033; criteria 0.1) and the %RSD for 2-butanone (actual 37.3; criteria 30). Detection limits for 2-butanone were rejected in Sample S1-4 TB.

#### B. Continuing

Continuing calibration criteria were met on 5/8/91 (Instrument J) with the exception of the % difference for acetone (actual 25.7; criteria 25), 2-butanone (actual 31.1; criteria 25), and vinyl acetate (actual 27.1; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/9/91 (Instrument G) with the exception of the RF for 2-butanone (actual 0.03; criteria 0.1) and the % difference for bromoform (actual 30.1; criteria 25). Data were not affected.



#### IV. Blanks

Methylene chloride was reported in the Method Blanks VBLK01 and VBLK02. Methylene chloride results for Samples S1-4 and S1-4 DUP were qualified as less than the reported values. Chloroform and toluene, although not reported on the Form Is for Method Blanks VBLK01 and VBLK02, were listed on the quant reports for both samples. Chloroform and toluene results for Samples S1-4 and S1-4 DUP were qualified as less than the reported values.

## V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-4. Data were within acceptance criteria.

#### VII. Field Duplicates

Compounds and concentrations (ug/L) reported in Samples S1-4 and S1-4 DUP were as follows:

Compound	S1-4	S1-4 DUP
Trichloroethene	11	9
Tetrachloroethene	280	280
Acetone	17	

Because acetone was found in only one of the duplicate samples, the value reported for acetone in Sample S1-4 was rejected. Other data were within acceptance criteria.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

### IX. TCL Compound Identification

TCL compound identifications were acceptable.



#### X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

#### XII. System Performance

System performance requires attention. Manual integrations should be addressed. All samples exceeded the required holding time.

#### XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was excellent. Values reported for methylene chloride, chloroform, and toluene were qualified as less than the reported values due to laboratory contamination. Detection limits for aromatic compounds were estimated in all samples. The detection limit for 2-butanone was rejected in Sample S1-4TB. The acetone result in Sample S1-4 was rejected.

## VOLATILE DRGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. S1 -4TB '---<del>00022---</del>

\_ab Name: PACE

Contract:

1atrix: (Soil/water) WATER

Lab Sample ID: 3048

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2836

cevel: (low/med) LOW

Date Received: 5/ 2/91

: Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:	CONCEN.	TRATION	UNITS:
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: 74-87-3Chloromethane	10.	; U ;
1 /4-6/-5 Cittoromethane		
74-83-9Bromomethane:		: 0
75-01-4Vinyl Chloride	10.	
75-00-3Chloroethane	10.	יט:
1 75-09-2Methylene Chloride	5.	10 1
67-64-1Acetone	10.	וט
75-15-0Carbon Disulfide	5.	וט ו
75-35-41,1-Dichloroethene	5.	וט
75-34-31,1-Dichloroethane	5.	יט
540-59-01,2-Dichloroethene (total)_	5.	.U :
67-66-3Chloroform	5.	U I
107-06-21,2-Dichloroethane	5.	IU .
78-93-32-Butanone	10.	HOR!
71-55-61,1,1-Trichloroethane	5.	יטי
56-23-5Carbon Tetrachloride	5.	:U :
1 108-05-4Vinyl Acetate	10.	iu i
75-27-4Bromodichloromethane	5.	:0 :
78-87-51,2-Dichloropropane	5.	iu i
110061-01-5cis-1,3-Dichloropropene	5.	iu i
79-01-6Trichloroethene	5.	iu i
124-48-1Dibromochloromethane	5.	iu i
79-00-51,1,2-Trichloroethane	5.	iu i
71-43-2Benzene	5.	In7 :
10061-02-6Trans-1,3-Dichloropropene	5.	וט ו
75-25-2Bromoform	5.	:ប :
108-10-1	10.	:ប :
591-78-62-Hexanone	10.	;U ;
127-18-4Tetrachloroethene	5.	; U ;
79-34-51,1,2,2-Tetrachloroethane!	5.	:U ;
108-88-3Toluene	5.	: Lu ;
108-90-7Chlorobenzene	5.	:0) :
100-41-4Ethylbenzene	5.	: " \" :
100-42-5Styrene	5.	ווֹאָ :
1330-20-7Xylene(total)	5.	۱ ر۱
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#### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Contract: Lab Name: PACE

SDG No. 10023 SAS No.:

Lab Sample ID: 3048 Matrix: (Soil/water) WATER

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2836

Date Received: 5/ 2/91 \_evel: (low/med) LOW

% Moisture: not dec.100. Date Analyzed: 5/ 9/91

Dilution Factor: 1.00 Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	: COMPOUND NAME	;   RT !=======	:   EST. CONC. 	;
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## VOI TILE ORGANICS ANALYSIS DATA SHEET

51-4

EPA SAMPLE NO.

Lab Name: PACE Contract:

\_\_00027\_\_

Matrix: (Soil/water) WATER Lab Sample ID: 3049

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2509

tevel: (low/med) tOW Date Received: 5/ 2/91

% Moisture: not dec.100. Date Analyzed: 5/ 9/91

Column: (pack/cap) PACk Dilution Factor: 2.50

		CONCENTRA	ATION UN	VITS:		
CAS NO.	COMPOUND	tug/L or	ug/Kg)	UG/L	1	Ω
	·					
;			1		;	1
1 74-87-3-	Chloromethane		;	25.	: U	:
1 74-83-9-	Bromomethane		!	25.	ŀυ	;
1 75-01-4-	Vinyl Chloride		;	25.	١U	;
1 75-00-3-	Chloroethane		;	25.	₩.	. :
1 75-09-2-	Methylene Chlorid	6	<b>;</b>	13.	HBI	^
: 67-64-1-	Acetone			17-	ा ठ	12:
1 75-15-0-	Carbon Disulfide		;	12.	: U	1
! 75-35 <b>-</b> 4-	1.1-Dichloroethen	e	:	12.	١U	;
1 75-34-3-	1,1-Dichloroethan	e	:	12.	ŀυ	:
1 540-59-0-	1.2-Dichloroethen	e (total)	!	12.	١U	;
1 67-66-3-	Chloroform		:	4.	1-8	U:
107-06-2-	1,2-Dichloroethan	e	1	12.	ΙU	ŧ
: 78-93-3 <b>-</b>	D-Butanone		i ;	25.	١U	;
1 71-55-6-	1,1,1-Trichloroet	hane	:	12.	١U	;
: 56-23-5-	Carbon Tetrachlor	ıde	:	12.	١U	:
108-05-4-	Vinyl Acetate		;	25.	١U	:
1 75-27-4-	Bromodichlorometh	ane	:	12.	: U	:
1 78-87-5-	1,2-Dichloropropa	ne	!	12.	:U	:
110061-01-5-	cis-1.3-Dichlorop	ropene		12.	: U	:
1 79-01-6-	Trichloroethene _		;	11.	; J	!
1 124-48-1-	Dibromochlorometh	ane	;	12.	١U	:
1 79-00-5-	1.1.2-Trichloroet	nane	:	12.	١U	;
1 71-43-2-	Benzene		;	12.	Lu:	;
110061-02-6-	Trans-1.3-Dichlore	opropene	:	12.	:U	;
	Bromoform		:	12.	ΙU	;
108-10-1-	4-Methy1-2-Pentand	one		25.	: U	:
1 591-78-6-	2-Hexanone		;	25.	!U	:
127-18-4-	Tetrachloroethene		;	280.	}	- 1
1 79-34-5-	1,1,2,2-Tetrachlor	roethane	;	12.	ŧυ	1
108-88-3-	Toluene		:	6.	131	<b>ん</b> :
108-90-7	Chlorobenzene		;	12.	:u7	;
100-41-4	Ethylbenzene		!	12.	:UJ	1
100-42-5	Styrene			12.	ζu:	- 1
1330-20-7	Xylene (total)		; _ <b>_</b> ;	12.	נט:	;
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# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S1-4

EPA SAMPLE NO.

Lab Name: PACE Contract:

Matrix: (Soil/water) WATER Lab Sample ID: 3049

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2509

Level: (low/med) LOW Date Received: 5/ 2/91

% Moisture: not dec.100. Date Analyzed: 5/ 9/91

Column: (pack/cap) PACk Dilution Factor: 2.50

Number TICs found: 0 CONCENTRATION UNITS:

CAS NUMBER	: COMPOUND NAME	: RT	EST. CONC.	: 0 :
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## VOL TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. : S1-4DUP

Lab Name: PACE

Contract:

'--<del>00038----</del>'

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3050

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2512

Level: (low/med) LOW

Date Received: 5/ 2/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

column: (pack/cap) PACk

Dilution Factor: 2.50

CONCENTRATION UNITS:

CAS NO. COMPOL		or ug/Kg		Ω
:				<del></del> :
74-87-3Chloro	methane	i	25.	
1 74-83-9Bromon	ethane		25.	:U :
1 75-01-4Viny1	Chloride		25.	:U :
75-00-3Chlore	ethane	;	25.	:U :
75-09-2Methyl	ene Chloride		10.	EJU:
67-64-1Acetor	P	:	25.	10
75-15-0Carbon	Disulfide	;	12.	
75-35-41,1-Di	chloroethene		iā.	:0 :
75-34-31,1-Di	chloroethane	;	12.	:0 :
540-59-01,2-Di	chloroethene (to	tal)	12.	Ü
67-66-3Chloro			з.	341
1 107-06-21,2-Di	chloroethane		12.	IU I
78-93-32-Buta	none		25.	Ιυ :
71-55-61,1,1-	Trichloroethane		12.	iu i
56-23-5Carbon	Tetrachloride	!	12.	; U
108-05-4Vinyl	Acetate		25.	ΙŪ :
: 75-27-4Bromod	ichloromethane	:	12.	10 1
78-87-51,2-Di	chloropropane	:	12.	10 1
:10061-01-5cis-1,	3-Dichloropropens		12.	ίŪ ;
; 79-01-6Trichl	oroethene	:	9.	; J ;
124-48-1Dibrom	ochloromethane	;	12.	:U :
79-00-51,1,2-	Trichloroethane	;	12.	:υ :
l 71-43-2Benzen	<u> </u>		12.	: (0)
:10061-02-6Trans-	1.3-Dichloroprope	ne :	12.	: U :
1 75-25-2Bromof	orm .	;	12.	1U 1
108-10-14-Meth	vl-2-Pentanone	:	25.	:U :
: 591-78-62-Hexai	none	;	25.	:U :
127-18-4Tetrac	aloroethene	;	280.	: :
1 79-34-51,1,2,2	2-Tetrachloroetha	ne:	12.	: U :
108-88-3Toluene		:	Б.	1 34:
108-90-7Chloro	enzene	;	12.	: UJ :
100-41-4Ethylbe	enzene	:	12.	:nj :
100-42-5Styrene	?	;		:n ) :
1330-20-7Xylene	(total)	1	12.	۱ ر ۱
		: :		!!

1 E

## VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS S1 -4DUP Contract:

Lab Name: PACE

SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3050

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2512

Level: (low/med) LOW Date Received: 5/ 2/91

% Moisture: not dec.100. Date Analyzed: 5/ 9/91

Dilution Factor: 2.50 Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	: : RT !=======	: : EST. CONC.	: : 0 : !====:
1		; 		
2				¦;
4; 5;		!		¦
6		!		
8		'		' '
9		. —————		;   ;
11				
13				
15				
17:				
10				
20				
22				
23				
25				
27.				
29.				:
30				;

FORM I VOA-TIC

1/87 Rev.

EPA SAMPLE NO.

00039



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 05/01/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No valid target compounds were detected. All non-detects were qualified as estimates due to the manual integration of areas for all three internal standards and the majority of the target compounds. Documentation to support these manual integrations has been requested from the laboratory. When received the data will be re-evaluated.

No data was provided for sample S4-2. The sample was not analyzed by Method 524.2.

The date of sample collection is not provided on some of the chain of custody records. This will need to be addressed to provide defensible data.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable. (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Data Validation for Environmental Project Control, Inc.

Samples Collected May 1, 1991

Volatiles Analyses Data

Method 524.2 Analyses

#### Case Narrative

Nine treatment system samples were collected May 1, 1991 and submitted to Pace, Inc. May 2, 1991. The laboratory was requested to perform purgeable volatile analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the more volatile compounds.

No valid target compounds were detected. Benzene is reported at 1.2 ppb in sample S3-2FB but this result is not supported by the raw data. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-2 because the sample was not analyzed by Method 524.2.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3035	S1-4FB	05/01/91
3036	S2-2	05/01/91
3037	S3-2FB	05/01/91
3038	S3-2	05/01/91
3039	S4-2	05/01/91
3040	S5-2	05/01/91
3041	S6-4	05/01/91
3042	S6-4Dup	05/01/91
3043	S6-4TB	05/01/91

The areas reviewed during validation are listed below.



#### ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
    - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment of Data for a Case



#### DATA VALIDATION

#### I. Sample Holding Times

All samples were analyzed outside the 7-day holding time for non-preserved samples but within the 14-day holding time for aqueous volatile samples. Detection limits for aromatic compounds were qualified as estimates for all samples.

#### II. Instrument Performance

Inst. F met bromofluorobenzene (BFB) ion abundance criteria on 05/11/91 1632, 05/13/91 1016, 05/14/91 1038, 05/14/91 2304, and 05/15/91 1354.

#### III. Calibration

The areas for all internal standards and most of the target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all affected compounds for the associated samples have been qualified as estimates.

#### 1) Initial Calibration 05/12/91 Inst F

All compounds met the 0.10 response factor criteria established for this project.

All compounds met the 30% relative standard deviation (%RSD) criteria.

Continuing Calibration 05/12/91 1151 on Inst. F met criteria with the exception of the percent difference (%D) for trans-1,3-dichloropropene (35%). This compound was not detected and no data were qualified.

Continuing Calibration criteria were met on 05/13/91 1107 and 05/14/91 1201 on Inst. F.

Continuing Calibration 05/14/91 2338 on Inst. F met criteria with the exceptions of bromodichloromethane (28%) and trans-1,3-dichloropropene (31%). These compounds were not detected and no data were qualified.



Continuing Calibration 05/15/91 1446 on Inst. F met criteria with the exception of trans-1,3-dichloropropene (46%). This compound was not detected and no data have been qualified.

#### IV. Blanks

No target compounds were detected in the four method blanks, the trip blank or the field blank identified as S1-4FB. The field blank identified as S3-2FB had benzene reported at 1.2 ppb but this value is not supported by the raw data. The benzene result has been rejected.

#### V. Surrogate Recovery

All surrogate recoveries were within control limits with the exception of toluene-d8 in sample S2-2. The recovery was 77% and the lower limit is 88%. The sample was not reanalyzed. No target compounds were detected and no data have been qualified.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike recoveries are within the established advisory limits.

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits with the exceptions of 1,1-dichloroethene, trichloroethene and benzene. These compounds were not detected in the unspiked sample and no data have been qualified.

#### VII. Field Quality Control Samples

Sample S6-4 and S6-4Dup were submitted as duplicate samples. No target compounds were detected in either sample.

No valid target compounds were detected in the field or trip blanks.

#### VIII. Internal Standards Performance

All retention times (RT) and internal standard (IS) areas are acceptable.



#### IX. TCL Compound Identification

No compounds were detected.

### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined by the PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined by the PQL study are as follows:

Compound	MDL (ug/L)
vinyl chloride	0.48
chloroethane	0.49
methylene chloride	4.41
1,1-dichloroethene	0.67
1,1-dichloroethane	0.54
trans-1,2-dichloroethene	0.50
chloroform	0.53
1,2-dichloroethane	0.52
1,1,1-trichloroethane	0.44
carbon tetrachloride	0.43
bromodichloromethane	0.38
1,2-dichloropropane	0.45
cis-1,3-dichloropropene	0.33
trichloroethene	0.42
dibromochloromethane	0.33
1,1,2-trichloroethane	0.43
benzene	0.58
trans-1,3-dichloropropene	0.07
bromoform	0.49
tetrachloroethene	0.51
1,1,2,2-tetrachloroethane	0.44
toluene	0.45
chlorobenzene	0.44
ethylbenzene	0.51
m-xylene	0.48
o-, p-xylene	0.93
1,2-dichloroethane-d4	0.50
toluene-d8	0.45
bromofluorobenzene	0.36

The above MDLs should be applied to these data.

### XI. Tentatively Identified Compounds

No TICs were detected in this sample delivery group.



### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

No valid target compounds were detected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-2 because the sample was not analyzed by Method 524.2.

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	Ī	<u>Jnits</u>	MDL	95 0030353 05/01/91 05/02/91 <u>\$1-4FB</u>
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 Vinyi chiorottane Chioroethane Methylene chloride 1,1-Dichloroethane 1,1-Dichloroethane trans-1,2-Dichloroethene	ւ Ն Մ	ig/L ig/L ig/L ig/L	0.5 0.5 0.5 0.5 0.5	ND WI ND WI ND WI ND WI ND WI
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ນ ນ ນ ນ	g/L g/L g/L g/L	0.5 0.5 0.5 0.5	ND ND U S ND I ND I ND I ND I
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	บ น บ	g/L ( g/L ( g/L ( g/L (	0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND ND ND ND ND ND ND ND N
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	บ: บ: บ:	g/L ( g/L ( g/L ( g/L (	).5 ).5 ).5	ND US ND I ND I ND I
Ethyl benzene Xylene, total				AD AZ

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0030361 05/01/91 05/02/91 S2-2
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODE Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	DIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND UJ ND UJ ND UJ ND UJ
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UT ND ND ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND US

MDL Method Detection Limit

ND Not detected at or above the MDL.

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			1 2	

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0030370 05/01/91 05/02/91 S3-2FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MC vinyl chloride Chloroetnane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ODIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND I ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U J ND I ND I ND I
1.2-Dichloropropane cis-1.3-Dichloropropene Trichloroethene Dibromochloromethane 1.1.2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U J ND I ND I ND I ND I ND I
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND US

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifire	١t
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PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	<u>MDL</u>	95 0030388 05/01/91 05/02/91 S3-2
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND UJ ND UJ ND J ND J
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND UJ ND   ND   ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND I ND I ND I ND I
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND US

Method Detection Limit Not detected at or above the MDL. MDL

ND

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0030400 05/01/91 05/02/91 S5-2
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WIND ND ND ND ND ND ND ND ND ND ND ND ND N
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND J ND J ND J ND J ND J ND J
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND I ND I ND I ND I ND I
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U5 ND   ND   ND   ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND US

MDL

ND

Method Detection Limit Not detected at or above the MDL.

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0030418 05/01/91 05/02/91 <u>\$6-4</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED vinyi chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND UJ ND U ND U ND U
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U.J ND J ND J ND J
1,2-Dichloropropane cis-1.3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U J ND J ND J ND J
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND I ND I ND I ND I
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND US

MDL

Method Detection Limit Not detected at or above the MDL. ND

Unifirst	PACE Proj	ect Numb	er: 81050250
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0030426 05/01/91 05/02/91 S6-4 DUP
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride l,l-Dichloroethene l,l-Dichloroethane trans-l,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND UJ ND UJ ND UJ
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND   ND   ND   ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND ND ND ND ND ND ND ND N
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND US

MDL ND Method Detection Limit Not detected at or above the MDL.

PACE Sample Number: Date Collected: Date Received:			95 0030434 05/01/91 05/02/91 S6-4 TRIP
<u>Parameter</u>	<u>Units</u>	MDL	BLANK
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US ND US
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U J ND ND ND ND ND ND ND ND ND ND ND ND ND N
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND US

MDL

Method Detection Limit Not detected at or above the MDL. ND



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

INORGANIC ANALYSES DATA

Samples Collected 5/1/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

Only dissolved cadmium, chromium, copper, and zinc were analyzed. Cadmium, copper, and zinc results were qualified as less than their reported values due to blank contamination.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Oualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Inorganic Data Validation

for

## Environmental Project Control, Inc.

## Samples Collected 5/1/91

#### Case Narrative

This group contained four water samples including one field blank. The samples were analyzed for only dissolved metals (cadmium, chromium, copper, and zinc). The samples were field filtered.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
A-1	3150	5/1/91
A-4FB	3153	5/1/91
A5R7-10	3154	5/1/91
A6R1-6	3155	5/1/91



The areas reviewed during validation are listed below.

## CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
- XII. Overall Assessment



#### Data Validation

#### I. Holding Times

Samples were analyzed within acceptable holding times.

#### II. Calibration

Instrument calibration was satisfactory.

#### III. Blanks

The field blank, A-4FB, contained copper (60 ug/L) at more than twice the CRDL (25 ug/L). All copper values were qualified as less than their reported values.

The preparation blank was clean.

The CCB's for cadmium were slightly above the IDL. Cadmium results were qualified as less than the reported values.

The CCB's for zinc were above the IDL. Zinc results were qualified as less than the reported values.

#### IV. ICP Interference Check Sample

ICS results were satisfactory.

#### V. Matrix Spike Sample Analysis

The case narrative indicated that sample A-1 was spiked as the matrix spike. However, the chain of custody included a sample designated as A-3MS (the results for which were not otherwise reported) which was presumed to be the sample used for the matrix spike. Consequently, it was unclear if a portion of A-1 was spiked or if A-3MS was spiked. Matrix spike results were satisfactory.

#### VI. Duplicate Sample Analysis

The case narrative indicated that sample A-1 was duplicated. However, the chain of custody included a sample designated as A-2FD (the results for which were not otherwise reported) which was presumed to be the sample to be used for the duplicate. Consequently, it was unclear if a portion of A-1 was duplicated or if A-2FD was used. Duplicate results were satisfactory.



#### VII. Laboratory Control Sample Analysis

LCS results were satisfactory.

#### VIII. Furnace Atomic Absorption Analysis

Furnace analyses were satisfactory.

### IX. ICP Serial Dilution Analysis

Serial dilution results were satisfactory although concentrations were not sufficiently high to be meaningful.

#### X. Detection Limits

IDL's were less than the CRDL's.

The cadmium value reported for A-4FB was less than the IDL. This value was qualified as less than the IDL. The cadmium values reported for the other samples contained two decimal places suggesting sensitivity and precision that probably does not exist. These data were rounded to one decimal place.

## XI. Sample Result Verification

Concentrations were calculated correctly.

#### XII. Overall Assessment

All copper values were qualified as less than their reported values.

Cadmium and zinc results were qualified as less than the reported values due to calibration blank values above the IDL.

The cadmium value reported for A-4FB was less than the IDL. This value was qualified as less than the IDL. The cadmium values reported for the other samples contained two decimal places suggesting sensitivity and precision that probably does not exist. These data were rounded to one decimal place.

Site Name: Wells G & H

## WATER SAMPLES

(ug/L)

Case # 810503.509

Sampling Date(s): 5/1/91

	Sample No	3150	==	3153		3154		3155							<u> </u>			
Dili	ution Factor	1		1		1		1										
	Location	A-1		A-4FB		A5R7-	10	A6R1-6	3									
	Lab ID																	
						}												
CRDL			i															
200	Aluminum	N/R		N/R		N/R		N/R										
60	Antimony	N/R		N/R		N/R		N/R										
	*Arsenic	N/R		N/R		N/R		N/R										
	Barium	N/R		N/R		N/R		N/R			 							
5	Beryllium	N/R		N/R		N/R		N/R			 			 				
5	*Cadmium	0.2	U	0.1	U	0.4	U	0.4	U		 			 L				
	Calcium	N/R		N/R		N/R		N/R		<u> </u>	 							
											 				<u> </u>	 		
l	Cobalt	N/R		N/R		N/R		N/R										
25	Copper	53.0	U	60 0		92.0	U	90.0	U		 ļ		ļ	 				ot
100	Iron	N/R		N/R		N/R		N/R						 	<u> </u>			
3	*Lead	N/R		N/R		N/R		N/R			 					 		
5000	Magnesium	N/R		N/R		N/R		N/R			 							
	Manganese	N/R		N/R		N/R		N/R					<u> </u>					
0.2	Mercury	N/R		N/R		N/R		N/R			 							
40	*Nickel	N/R		N/R		N/R		N/R			 <u> </u>				<u> </u>			
5000	Potassium	N/R		N/R	L	N/R		N/R				_					L	
5	Selenium	N/R		N/R		N/R		N/R										
10	Silver	N/R		N/R		N/R		N/R										
5000	Sodium	N/R		N/R		N/R		N/R										
10	Thallium	N/R		N/R		N/R		N/R										
50	Vanadium	N/R		N/R		N/R		N/R										
20	Zinc	90	U	5.0	U	17.0	U	190	U									
10	*Cyanide	N/R		N/R		N/R		N/R			l							

\*Action Level Exists

N/R = Not Required

## U.S. EPA - CLP

		INORGANIC	SHEET		EPA SAMPLE NO.		
h Names Digital	INORGANIC ANALYSES DATA SHEET  Name: PACE_INCORPORATEDContract: EPC						
b Name: PAC	E_INCORPORAT	. E.D	Contract: E	PC		l	
-b Code:	Ca	se No.:	SAS No.	:		SDG No.:	
atrix (soil/	water): WATE	Lab Sample ID: 3150.3					
vel (low/med	d): LOW_	Date Received: 05/03/91					
Solids:		.0					
, Co	oncentration	Units (ug	/L or mg/kg dr	y weig	nt):	UG/L_	
	1						
	CAS No.	Analyte	Concentration	c Q	2   1	M	
	7429-90-5	Aluminum		-	j	NR	
	7440-36-0	Antimony		- -		NR	
	7440-38-2	Arsenic	·	- -		NR	
	7440-39-3	Barium —		-		NR	
	7440-41-7	Beryllium		-		NR	
	7440-43-9	Cadmium	0.2 2,16	BU		F_	
	7440-70-2	Calcium				NR	
	7440-47-3	Chromium_	9.5	טו		P_	
	7440-48-4	Cobalt				√R	
	7440-50-8	Copper	53.0_	<u> </u>	1	P_	
	7439-89-6	Iron		_	1	NR	
	7439-92-1	Lead		_	1	√R	
	7439-95-4	Magnesium				NR	
	7439-96-5	Manganese		_		1R	
	7439-97-6	Mercury		_	1	NR	
	7440-02-0	Nickel			1	NR	
	7440-09-7	Potassium		<b>_</b>	1	₹R	
		Selenium_		_		NR	
	7440-22-4					1R	
	7440-23-5	Sodium				1R	
	7440-28-0	Thallium_		_		IR	
	7440-62-2	Vanadium_				IR	
	7440-66-6	Zinc	9.0_	BU		2	
		Cyanide		-	1	IR	
lor Before:	1	Clarit	y Before:	- ·	า	· Cexture:	
or After:			y After:			Artifacts:	
ments:		CIUII	y Altel.	<del></del>	•		
THIS_SAMPLE	_WAS_ANALYZI	ED_AS_A_DIS	SOLVED_METAL				
		<del></del>			٠		

## U.S. EPA - CLP

## 1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

.  b Name: PACE_INCORPORATED Contract: EPC							A-4FB	
	_		SAS No.				No.: 00016	
Matrix (soil/	water): WATE	R		La	b Samp	le ID:	3153.8	
I vel (low/med	d): LOW_	_		Da	te Rec	eived:	05/03/91	
% Solids:		0						
Co	oncentration	Units (ug,	/L or mg/kg dr	y w	eight)	: UG/L	<u>'</u> _	
•	CAS No.	Analyte	Concentration	С	Q	М		
	7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6	Aluminum_Antimony_Arsenic_Barium_Beryllium_Cadmium_Calcium_Chromium_Cobalt_Copper_Iron_Lead_Magnesium_Manganese_Mercury_Nickel_Potassium_Selenium_Silver_Sodium_Thallium_Vanadium_Zinc_Cyanide_Cyanide_Caric_Cyanide_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Caric_Car			<u>u</u>	NR NR NR NR NR NR NR NR NR NR NR NR NR N		
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c or After:	<u></u>	Clarit	y After:			Artifa	acts:	
ments: THIS_SAMPLE	_was_analyzi	ED_AS_A_DIS	SOLVED_METAL					

# U.S. EPA - CLP

# 1 INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.
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)		INORGANIC	ANALYSES DATA	SH	EET	
Name: PAC	E INCORPORA	red	Contract: E	PC		A5R7-10
	Ca					SDG No.: _0001
	water): WATI					ple ID: 3154.6
'el (low/me	d): LOW_			D	ate Red	ceived: 05/03/91
Solids:		0				
С	oncentration	Units (ug	/L or mg/kg dr	У '	weight)	: UG/L_
	CAS No.	Analyte	Concentration	С	Q	M
	7420 00 5	122		_		-   -
	7429-90-5	Aluminum_		-		NR
	7440-36-0 7440-38-2	Antimony_ Arsenic		-		NR NR
	7440-38-2	Barium		-		<del>-</del>
	7440-39-3	Beryllium		-		- NR NR
	7440-41-7	Cadmium	0-4 D-4I	=	11	F_
	7440-70-2	Calcium		ام	<u>~</u>	NR ·
	7440-47-3	Chromium	9.5	<u></u>		P
	7440-48-4	Cobalt	<del></del>			NR
	7440-50-8	Copper	92.0	-	u	P
	7439-89-6	Iron		-	<u> </u>	NR
	7439-92-1	Lead		-		NR
	7439-95-4	Magnesium		-		NR
	7439-96-5	Manganese		-		NR
	7439-97-6	Mercury		-		NR
	7440-02-0	Nickel		-		NR
	7440-09-7	Potassium				NR
	7782-49-2	Selenium				NR
	7440-22-4	Silver		_		NR
	7440-23-5	Sodium				NR
	7440-28-0	Thallium_				NR
	7440-62-2	Vanadium_				NR
	7440-66-6	Zinc	17.0_	$\boldsymbol{\mathcal{B}}'$	<u>u</u>	P_
		Cyanide		-		NR
	· · · · · · · · · · · · · · · · · · ·	l <del></del> l		1		I I
or Before:		Clarit	y Before:			Texture:
r After:		Clarit	y After:			Artifacts:
Tents: HIS_SAMPLE	_WAS_ANALYZI	ED_AS_A_DIS	SOLVED_METAL			

# U.S. EPA - CLP

# 1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

			WINDISES DAIN	0111			
h Namas DAG	TNCODDODA	חשים	Contro et a F	חמ		A	6R1-6
b Name: PACE	_INCORPORA	LED	Contract: E	PC_		-	
b Code:	Ca	ase No.:	SAS No.	: _		SDG N	o.: <del>-000</del> 1
trix (soil/w	water): WATE	ER		La	ab Samp	ple ID:	3155.4
vel (low/med	l): LOW_	_		Da	te Red	ceived: (	05/03/91
Solids:		_0					
Cc	oncentration	Units (ug,	/L or mg/kg dry	y w	eight)	: UG/L_	
	CAS No.	Analyte	Concentration	С	Q	М	
	7429-90-5	Aluminum		-		- NR	
	7440-36-0			-		- NR	
	7440-38-2	Arcimony_		-		- NR	
	7440-38-2	Barium		-		- NR	
	7440-33-3	Beryllium		-		- NR	
	7440-41-7	Cadmium	0-4 0-44	딞	11	F_	
	7440-70-2	Calcium			<u>α</u>	NR	
	7440-47-3	Chromium	9.5	ਹ		-   P	
	7440-48-4	Cobalt				NR	
	7440-50-8	Copper	90.0	-	и	P	
	7439-89-6	Iron		-[	_и	NR	
	7439-92-1	Lead		-1		NR	
	7439-95-4	Magnesium		-		NR	
	7439-96-5	Manganese		-[		NR	
	7439-97-6	Mercury		-		NR	
	7440-02-0	Nickel		-1		NR	
	7440-09-7	Potassium		- -		NR	
	7782-49-2	Selenium		_		NR	
	7440-22-4	Silver		_ .		NR	
	7440-23-5	Sodium		_ .		NR	
	7440-28-0	Thallium		-1.		NR	
	7440-62-2	Vanadium		_ .		NR	
	7440-66-6	Zinc	19.0_	$\mathbf{z}$	U	P_	
		Cyanide		_[.		NR	
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or Before:		   Clarit	y Before:	1-		Texture	: <b>:</b>



# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/2/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



# EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. Detection limits for aromatic compounds were qualified as estimated in all samples except S1-5 TB. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Case Narrative

Five samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 2, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-5	3113	05/02/91
S1-5 DUP	3117	05/02/91
S1-5 TB	3119	05/02/91

The title page for the data package states that the samples were collected on 5/3/91 rather than 5/2/91. The data validator has corrected the title page; a corrected copy is included with this report.



# Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



# I. Holding Times

Sample S1-5 TB was analyzed within the 7-day holding for nonpreserved samples. All other samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimates for all three samples.

# II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met on 4/24/91 (Instrument J).

# B. Continuing

Continuing calibration criteria were met on 5/8/91 with the exception of the % difference for 2-butanone (actual 31.7; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/13/91 with the exception of the % difference for 2-butanone (actual 32.4; criteria 25). Data were not affected.

#### IV. Blanks

Methylene chloride was reported in the Method Blank VBLK1 and the trip blank. Acetone was reported in Method Blank VBLK2. Methylene chloride in the trip blank and acetone in Sample S1-5 were qualified as less than the reported values.

# V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.



# VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-5. Data were within acceptance criteria.

# VII. Field Duplicates

Compounds and concentrations (ug/L) reported in Samples S1-5 and S1-5 DUP were as follows:

Compound	S1-5	S1-5 DUP
Trichloroethene	14	
Tetrachloroethene	690	750

Because trichloroethene was found in only one of the duplicate samples, the value reported for trichloroethene in Sample S1-5 was rejected. Other data were within acceptance criteria.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

# IX. TCL Compound Identification

TCL compound identifications were acceptable.

# X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

# XII. System Performance

System performance requires attention. Manual integrations should be addressed. All but one sample exceeded the required holding time.



# XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was excellent. Detection limits for aromatic compounds were estimated in all samples except S1-5 TB. Methylene chloride in the trip blank and acetone inSample S1-S were qualified as less than the reported values. Trichloroethane was rejected in Sample S1-5.

# TITLE PAGE Analytical Data Report Package for

00001

ENVIRONMENTAL PROJECT CONTROL, INC.

FIELD	LABORATORY	SAMPLE	DATE & TIME OF SAMPLE COLLECTION
SAMPLE	SAMPLE	LOCATION	
81-5	95 003113.9	UNIFIRST SUNIFIRST UNIFIRST UNIFIRST UNIFIRST SUNIFIRST SUNIFIRST	2 91 05/03/91 N/A
81-5 MS	95 003115.5		2 91 05/03/91 N/A
81-5 MSD	95 003116.3		2 51 05/03/91 N/A
81-5 DUP	95 003117.1		5 12 51 05/03/91 N/A
81-5 TB	95 003119.8		12 51 05/03/91 N/A

DATE REPORTED LAB NAME

CERTIFICATION NO.

NY 11119

NJ 73460

CT PH-0498 MA NY0,57 //

KS E-168/1145

ROBERT M.

BCHULTE

SUPERVISOR/MANAGER SIGNATURE

NAME

EPA SAMPLE NO.

\_ab Name: PACE Contract:

1atrix: (soil/water) WATER

Contract: | S1-5

Lab Code: PACE Case No.: EPC SAS No.: SDG N.Q.Q 0 2 4

Lab Sample ID: 3113.**9** 

6/19/21

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2569

Level: (low/med) LOW Date Received: 5/ 3/91

: Moisture: not dec.100. Date Analyzed: 5/13/91

Column: (pack/cap) PACK Dilution Factor: 5.00

		CONCENT	RATION L	JNITS:	
CAS NO.	COMPOUND	(ug/L or	. ug∕kg)	UG/L	Q
					,
! 74-87-3-	Chloromethane		:	50.	יט
1 74-83-9-	Bromomethane		· ;	50.	: U
! 75-01-4-	Vinyl Chloride		· <u>;</u>	50.	:0 :
1 75-00-3-	Chloroethane		;	50.	; U ;
1 75-09-0-	Methylene Chlori		;	25.	:0 :
. 67-64-1-	Acetone	~~	;	22.	183 K
1 75-15-0-	Carbon Disulfide		;	25.	Ιυ :
1 75-35-4-	1,1-Dichloroethe		;	25.	:0 :
1 75-34-3-	1,1-Dichloroetha	''	:	25.	:0 :
1 70 54 5	1,2-Dichloroethe	ne (total	<u>:</u>	25.	:0 :
! 67-66-3-	Chloroform	ne voodar	· ;	25.	:
1 107-06-2-	1,2-Dichloroetha		;	25.	:0 :
· 78-93-3-	2-Butanone	,,,	;	50.	:0 :
1 71-55-6-	1,1,1-Trichloroe	thane	;	25.	:0 :
. /1 00 0 ! 56-03-5-	Carbon Tetrachlo	ride	<del></del> :	25.	:U :
108-05-4-	Vinyl Acetate		;	50.	
1 75-27-4-	Bromodichloromet	hane	;	25.	10 :
1 78-87-5-	1,2-Dichloroprop	200	i	25.	יט :
110061-01-5-	cis-1,3-Dichloro	oronene	;	25.	Ιυ . :
79-01-6-	Trichlorgethene	p. opene	;	14°.	13R
124-48-1	Dibromochloromet	hane	;	25.	וֹט ֹ וֹ
79-00-5-	1,1,2-Trichloroe	thane	<u>;</u>	25.	.U :
1 71-43-2	Benzene		<u>;</u>	25.	: 7 i
110061-02-6	Benzene Trans-1,3-Dichlor	ropropene	;	25.	
1 75-25-2	Bromoform			25.	iū i
108-10-1	4-Methyl-1-Pentar	one	;	50.	iu i
	2-Hexanone			50.	U
1 127-18-4	Tetrachloroethen		!	690.	1 1
	1,1,2,2-Tetrachlo			25.	:U :
108-88-3	Toluene		!	25.	; U) ;
108-90-7	Chlorobenzene		:	25.	ו נוו:
100-41-4	Ethylbenzene		:	25.	: (U)
1 100-42-5	Styrene		:	25.	: 41
1 1330-20-7	Xylene (total)		_ <b>_</b> ;	25.	: Lu 7 :
<b>!</b>			- <b></b> ¦		!;
				_: <b>-</b> -	

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Contract: Lab Name: PACE

SDG No.: 00025 

Lab Sample ID: 3113.9 Matrix: (soil/water) WATER

6/19/91

Sample wt/vol: 5. (g/ml) ML Lab File ID: J2569

Level: (low/med) LOW Date Received: 5/ 3/91

% Moisture: not dec.100. Date Analyzed: 5/13/91

Column: /pack/cap) PACk Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME		: EST. CONC.	: n
=======================================	! ====================================		!========	
1		, 1	!	!
2.		 !	!	
3.		1	,	·
4.			!	;
5.		!	!	
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12!				;
13				
15				!
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18				!
19.				
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24				<u>:</u>
25			!	:
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27			i	
28		!		<u>:</u>
			i	į
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		;	;	;

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

ETA SAMPLE NO.

Lab Name: PACE

Contract:

Matrix: (soil/water) WATER

Lab Sample IID= 3017 #

Sample wt/vol: 5. (g/mL) ML Lab File IDm J2572

Level: (low/med) LDW

Date Received: 5/ 3/91

% Moisture: not dec.100.

Date Analymeds 五江巴"野

Column: (pac)/cap) PACK

Dilution Factor: 5.00

CAS NO. COMPOUND	concen			UNTIS: ) SEVI		
1			:		11	::
1 74-87-3Chloromethane				5Ω.	ÜΪ,	;
1 74-83-9Bromomethane			;	Ħi.	(41)	';
: 75-01-4Vinyl Chloride			'	ID.	!! <u>!1</u> ]	4
: 75-00-3Chloroethane			!	<b>3</b> 57.	"ບ	1)
: 75-09-2Methylene Chloric	ie			<u> </u>	ाता।	;,
67-64-1Acetone			!	50.	17111	:
: 75-15-0Carbon Disulfide_	. <b>_</b>		;	, TIE,	النا،'	1
1 75-35-41,1-Dichloroether	ne		;	773.	HIC.	19
; 75-34-31,1-Dichloroethar				255	:∵⊞	:
; 540-59-01,2-Dichloroether	ne (tota	al)	!	T.	1241	1,
67-66-3Chloroform			;	25.	•!'Ш	;
107-06-21.2-Dichloroethar	ne		;		۱:'ك	1.
1 78-93-32-Butanone			:	II.	:PLI	"
: 71-55-61,1.1-Trichloroet	hane		;	<b>25.</b>	: Ш	**
: 56-23-5Carbon Tetrachlor	ide		;	Tit.	· !· Ш	#
108-05-4Vinyl Acetate			;	<b>31.</b>	Hill	ч
1 75-27-4Bromodichlorometh	ane		;	<del>75.</del> .	(910)	::
78-87-51,2-Dichloropropa					ĿШ	9
:10061-01-5cis-1,3-Dichlorop	ropene		;	71	нш	ı.
: 79-01-6Trichloroethene _			;	77	нш	3
1 124-48-1Dibromochlorometh					:::Ш	3
1 79-00-51,1,2-Trichloroet					:::::	4
					::IM 7	.;
110061-02-6Trans-1,3-Dichlor				ZI.	:::Ш	3
75-25-2Bromoform				77	'. <del>Ш</del> )	ij
108-10-14-Methyl-2-Pentan	one		<sup>¦</sup>	MD.	.; <u>T</u> .1	1
591-78-62-Hexanone			;	M.	:Ш:	4
127-18-4Tetrachloroethene			;	7 <b>51.</b>	::	.;
: 79-34-51,1.2.2-Tetrachlo	roethan	e _		77	::TE	:
108-88-3Toluene					:::W ]	#
: 108-90-7Chlorobenzene					: W J	;
100-41-4Ethylbenzene			'	<u> </u>	رَ للاا!!	1
100-42-5Styrene			!	<u> </u>	ן טייי	!
: 1330-20-7Xylene (total)			<u> </u>	25.	רח:,	::
					_!!	;

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S1-5DUP Contract: |\_\_\_\_\_

SDG No.: 000,33

Matrix: (soil/water) WATER 6/14/91 Lab Sample ID: 3117.

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2572

Date Received: 5/ 3/91 Level: (low/med) LOW

Date Analyzed: 5/13/91 % Moisture: not dec.100.

Column: (pack/cap) PACk Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

Lab Name: PACE

CAS NUMBER :	COMPOUND NAME	! : RT !	: EST. CONC.	: : Ω !=====
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·		¦	İ	¦
`		¦	!	¦
1		<u>'</u>	<u>'</u>	;
,,		<u>'</u>	,	<u>;</u>
, <u></u>			!	;
		'	<u>'</u>	<u>'</u>
		¦	;	;
<u> </u>		<b> </b>	'	'
10			'	<u>'</u> ,
		\ <b></b>	!	<u>'</u>
· · · · · · · · · · · · · · · · · · ·			;	¦ <i></i>
10			'	<u> </u>
1.1			<u>'</u>	'
<u> </u>				
				<b> </b> -
21				
	, <sup>1</sup>			
25		;		
26				
<sup>27</sup> •		:		
28		!		
29		;	!	
7A		;		
!				

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Contract: Lab Name: PACE

Matrix: (soil/water) WATER

Lab Sample ID: 3119. 🎖 6/14/41

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2494

Date Received: 5/ 3/91 Level: (low/med) LOW

% Moisture: not dec.100. Date Analyzed: 5/ 8/91

Dilution Factor: 1.00 Column: (pach/cap) PACk

CAS NO.	COMPOUND		RATION L r ug/Kg:	· - · <del></del>		)
74-87-3 74-83-9 75-01-4 75-09-2 67-64-1 75-35-4 75-35-4 75-34-3 75-66-3 107-06-2 78-93-3 108-05-4 75-27-4 78-87-5 10061-01-5 124-48-1 79-01-6 124-48-1 79-00-5 108-10-1 591-78-6 127-18-4 79-34-5 108-88-3	ChloromethaneBromomethaneVinyl ChlorideChloroethaneMethylene ChloroethaneCarbon Disulfic1,1-Dichloroethane1,2-DichloroethaneChloroform1,2-Dichloroethane1,1-Trichloroethane1,1-Trichloroethane1,1-Trichloroethane1,1-Trichloroethane1,2-DichloroproCarbon Tetrachlorome1,2-DichloroproCis-1,3-Dichlorome1,2-TrichloroethaneI,1,2-TrichloroethaneI,1,2-TrichloroethaneI,1,2-TrichloroethaneI,1,2-TrichloroethaneTans-1,3-DichlBenzeneTrans-1,3-DichlBromoform4-Methyl-2-Pent2-HexanoneTetrachloroethaneToluene	de	r ug/Kg:	10. 10. 10. 10. 10. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.		:
100-41-4	Chlorobenzene _ Ethvlbenzene Styrene Xylene (total)_		;	5. 5. 5.	: U : U : U : U	: : : : ;

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Contract:

Sample wt/vol: 5. (g/mL) ML

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3119.8

000 33

Lab File ID: J2494

Level: (low/med) LOW

Lab Name: PACE

Date Received: 5/ 3/91

% Moisture: not dec.100.

Date Analyzed: 5/ 8/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

: CAS NUMBER	COMPOUND NAME	, (1)	EST. CONC.	;   Ω
1		;		:
1 2				;;
3				!!
4 5.				<u>;</u>
6				'
7				
8	,			
9		!		!
10				
12		;		
13				
' 14;		1	;	
15;	i	!		;
17-				
18				;
19;	·	,		;
20;		:	!	!
21			[	:
23.		:	;	!
24				;
25;				
26		!		:
20		:		!
00		;		:
20		;		;
		;		;

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# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 05/02/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No valid target compounds were detected. All non-detects were qualified as estimates due to the manual integration of areas for all three internal standards and the majority of the target compounds. Documentation to support these manual integrations has been requested from the laboratory. When received the data will be re-evaluated.

No data was provided for sample S4-3. The sample was not analyzed by Method 524.2.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable. (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sampling quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Data Validation for Environmental Project Control, Inc.

Samples Collected May 2, 1991

Volatiles Analyses Data

Method 524.2 Analyses

#### Case Narrative

Eight treatment system samples were collected May 2, 1991 and submitted to Pace, Inc. May 3, 1991. The laboratory was requested to perform purgeable volatile analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the more volatile compounds.

No valid target compounds were detected. 1,1,1-trichloroethane was reported at 3 ppb in sample S5-3 but was not detected in the reanalysis of this sample. The result in the original analysis was rejected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for sample S4-3 because the sample was not analyzed by Method 524.2.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3118 3121	S1-5FB S6-5	05/02/91
3123	S6-5MS	05/02/91 05/02/91
3124 3125	S6-5MSD S6-5DUP	05/02/91 05/02/91
3127 3128	S6-5TB S2-3	05/02/91 05/02/91
3129	S3-3	05/02/91
3130 3131	S4-3 S5-3	05/02/91 05/02/91

The areas reviewed during validation are listed below.



# ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment of Data for a Case



#### DATA VALIDATION

# I. Sample Holding Times

All samples were analyzed outside the 7-day holding time for non-preserved samples but within the 14-day holding time for aqueous volatile samples. Detection limits for aromatic compounds were qualified as estimates for all samples.

#### II. Instrument Performance

Inst. F met bromofluorobenzene (BFB) ion abundance criteria on 05/11/91 1632, 05/14/91 2304, and 05/15/91 1354.

# III. Calibration

The areas for all internal standards and most of the target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all affected compounds for the associated samples have been qualified as estimates.

#### Initial Calibration 05/12/91 Inst F

All compounds met the 0.10 response factor criteria established for this project.

All compounds met the 30% relative standard deviation (%RSD) criteria.

Continuing Calibration 05/14/91 2338 on Inst. F met criteria with the exceptions of bromodichloromethane (28%) and trans-1,3-dichloropropene (31%). These compounds were not detected an no data were qualified.

Continuing Calibration 05/15/91 1446 on Inst. F met criteria with the exception of trans-1,3-dichloropropene (46%). This compound was not detected and no data have been qualified.

# TRILLIUM

### IV. Blanks

No target compounds were detected in the two method blanks, the trip blank or the field blank.

# V. Surrogate Recovery

All surrogate recoveries were within control limits with the exception of toluene-d8 in Sample S6-5MS, bromo- fluorobenzene in Samples S5-3 and S6-5MS and 1,2-dichloroethane-d4 in Sample S5-3RE. Surrogate recoveries were within control limits in the original analysis and the MSD analysis of S6-5. Different surrogates were outside control limits on sample S5-3 in the original analysis and the re-analysis. No target compounds were detected and no data have been qualified.

# VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike recoveries are within the established advisory limits.

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established advisory limits.

# VII. Field Quality Control Samples

Sample S6-5 and S6-5Dup were submitted as duplicate samples. No target compounds were detected in either sample.

No target compounds were detected in the field or trip Blanks.

#### VIII. Internal Standards Performance

All retention times (RT) and internal standard (IS) areas are acceptable.

# IX. TCL Compound Identification

No valid compounds were detected.



# X. Compound Quantitation and Reported Detection Limi

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined by the PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined by the PQL study are as follows:

Compound	MDL (ug/L)
vinyl chloride	0.48
chloroethane	0.49
methylene chloride	4.41
1,1-dichloroethene	0.67
1,1-dichloroethane	0.54
trans-1,2-dichloroethene	0.50
chloroform	0.53
1,2-dichloroethane	0.52
1,1,1-trichloroethane	0.44
carbon tetrachloride	0.43
bromodichloromethane	0.38
1,2-dichloropropane	0.45
cis-1,3-dichloropropene	0.33
trichloroethene	0.42
dibromochloromethane	0.33
1,1,2-trichloroethane	0.43
benzene	0.58
trans-1,3-dichloropropene	0.07
bromoform	0.49
tetrachloroethene	0.51
1,1,2,2-tetrachloroethane	0.44
toluene	0.45
chlorobenzene	0.44
ethylbenzene	0.51
m-xylene	0.48
o-, p-xylene	0.93
1,2-dichloroethane-d4	0.50
toluene-d8	0.45
bromofluorobenzene	0.36

The above MDLs should be applied to these data.

# XI. Tentatively Identified Compounds

No TICs were detected in this sample delivery group.



# XII. System Performance

System performance was acceptable.

# XIII. Overall Assessment of Data for a Case

No valid target compounds were detected. All non-detects have been qualified as estimates due to manual integration of internal standard and target compound areas. No data were provided for Sample S4-3 because it was not analyzed by Method 524.2.

PACE Project Number: 810503503 00029

PACE Sample Number: Date Collected: Date Received: Parameter	- <u>Units</u>	95 0031180 05/02/91 05/03/91 MDL S1-5 FB
ORGANIC ANALYSIS		
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyi chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 ND UJ 0.5 ND UJ 0.5 ND UJ 0.5 ND UJ 
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	- ug/L ug/L ug/L ug/L ug/L ug/L	0.5 ND US 0.5 ND US 0.5 ND US 0.5 ND US 0.5 ND US 0.5 ND US
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L 	- 0.5 ND US - 0.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND O.5 ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane- Toluene Chlorobenzene-	ug/L - ug/L	0.5 ND 0.5 ND 0.5 ND (-) 0.5 ND
Ethyl benzene Xylene, total.		0.5 ND
MDL Method_Detection_Limit ND Not detected at or above_the.		

PACE Project Number: 810503503 00033

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	<u>MDL</u>	95 0031210 05/02/91 05/03/91 S6-5
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene cis-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5 0.5	ND UJ ND UJ ND UJ ND UJ ND UJ
Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane 1,2-Dichloropropane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND
cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene trans-1,3-Dichloropropene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U J ND ND ND ND ND ND
Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethyl benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND   ND   ND   ND   ND
Xylene, total	ug/L	0.5	ND V5

Method Detection <u>Limit</u>
Not detected at or above the MDL. MDL

ND

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MOL	95 0031252 05/02/91 05/03/91 S6-5 DUP
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene cis-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5 0.5	ND WJ ND WJ ND WJ ND WJ
Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane 1,2-Dichloropropane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U S ND ND ND ND ND ND ND ND ND ND ND ND ND N
cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene trans-1,3-Dichloropropene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND
Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethyl benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U S
Xylene, total	ug/L	0.5	ND US

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0031279 05/02/91 05/03/91 <u>S6-5 TB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND UJ ND UJ ND UJ
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U.S ND U.S ND I ND I
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND I ND I ND I ND I ND I
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U S ND I ND I ND I ND I
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND Y

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031287 05/02/91 05/03/91 S2-3
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyi chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND US ND US ND US
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND JUJ ND J ND J ND J ND J
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND UJ

MDL Method Detection Limit
ND Not detected at or above the MDL.

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0031295 05/02/91 05/03/91 <u>\$3-3</u>
ORGANIC ANALYSIS			
vOLATTLE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND UJ ND ND ND ND ND ND ND ND ND ND ND ND ND N
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND I ND I ND ND
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND   ND   ND   ND   ND   ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND T

Method Detection Limit Not detected at or above the MDL. MDL

ND

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031317 05/02/91 05/03/91 S5-3
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroetnane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US ND US ND US ND US ND US ND US ND US
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND UJ ND UJ ND UJ
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U S ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U J ND   ND   ND   ND   ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND T

MDL

Method Detection Limit Not detected at or above the MDL. ND



# DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA Samples Collected May 2, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No target or tentatively identified compounds were detected in any of the three samples in this Sample Delivery Group. Detection limits for 3,3'-dichlorobenzidine were rejected in S6-5 and S1-5 FB; the detection limit for 4-nitrophenol was rejected in S1-5. All analytes quantitated using IS#4 and IS#5 in S1-5, S6-5, and S1-5 FB were flagged as estimated; analytes quantitated using IS#4 in S1-5 FB were also estimated.

Numerous manual integrations were performed in the standards supporting the data in this SDG, including areas for internal standards and surrogates. Some manual areas, including at least one internal standard and two surrogates, were also noted in the sample analyses. None of the manual integrations was documented in the data package, and therefore could not be evaluated as part of this validation effort. Due to the large number of manually integrated internal standards, all results in this SDG should be used with caution until and unless documentation is provided by the laboratory for independent review.

Problems identified on the Chain of Custody (COC) records include: (1) 6 COC's are included although only 2 are pertinent to this data package; (2) there is no "Accepted by" signature for the first signature pair, and no "Relinquished by" signature for the second pair; (3) the two transfer signatures recorded do not include the affiliation of the persons involved; (4) multiple entries are made for the same sample using identical sample identifications but listing different collection times; (5) corrections are made incorrectly as "write-overs", and none are initialled or dated; and (6) separate entries should not be made for MS/MSD samples.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.



R - The data are unusable (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.



# Case Narrative

Five water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 2, 1991 and received by Pace, Inc. on May 3, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

Client ID	<u>Lab ID</u>	<u>Collection Date</u>
S1-5	3114	5/02/91
S1-5 FB	3118	5/02/91
S6-5	3122	5/02/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810503.503.



### Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were extracted and analyzed within the established holding times.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria. The entries on Form V for the decafluorotriphenylphosphine (DFTPP) run on 6/9/91 do not match the raw data; a corrected copy of this Form V is attached to this validation report. The correct abundances are within criteria; no data are affected.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. In many cases, areas for internal standard (IS) and/or surrogate peaks have also been manually integrated; these must be documented in the data package due to the potential effect on quantitative results. Where an IS is manually integrated in any associated standard(s), all analytes quantitated using that IS are estimated in the samples until and unless documentation of the manually integrated area is provided for review.

#### A. Initial

The method blank, SBLK1, associated with this SDG was analyzed under an initial calibration (IC) run on 6/9-10/91. All criteria were met in this calibration with the exception of the Percent Relative Standard Deviations (%RSD) for 4-chloroaniline (33.2), benzoic acid (39.3), 1,2,4-trichlorobenzene (30.6), 3-nitroaniline (32.3), 3,3'-dichlorobenzidine (37.4), and 2-fluorobiphenyl (Surrogate-31.8). No qualifiers are applied on this basis, however it is noted that many manual areas were integrated in the standards making up this IC, including the following internal standard and surrogate peaks:

IS#1 (d4-1,4-dichlorobenzene) - 20, 50, 80, 120, 160 ppb stds

IS#2 (d8-naphthalene) - 120, 160 ppb standards

S#4 (d6-phenol) - 50 ppb standard

S#6 (2,4,6-tribromophenol) - 50 ppb standard

Documentation of manual integrations should be provided for all analytes, but is especially crucial when IS and surrogate peaks are



quantitated this way. The observed areas for IS#1 appear to be particularly variable, ranging from 45651 to 87215 area counts, all of which were generated manually. No qualifiers are applied since only the method blank was analyzed under this IC and no field sample data are directly affected.

Samples S1-5, S1-5 FB, and S6-5 were analyzed under an initial calibration (IC) performed on 6/11/91. All criteria were met in this calibration with the exception of the (%RSD) for 4chloroaniline (36.2), hexachlorocyclopentadiene (34.3), 2,4,5trichlorophenol (34.3), 2,6-dinitrotoluene (34.3), 4-nitroaniline (30.5), and 3,3'-dichlorobenzidine (45.0). No data are affected. Manual integrations are again noted for the following IS and surrogate peaks:

IS#1 (d4-1,4-dichlorobenzene) - 120, 160 ppb standards IS#2 (d8-naphthalene) - 50, 120, 160 ppb stds, and CC std

IS#4 (d10-phenanthrene) - 160 ppb standard

IS#6 (d12-perylene) - 120 ppb standard S2 (2-fluorobiphenyl) - 80, 160 ppb standards

S6 (2,4,6-tribromophenol) - 80 ppb std and CC standard

All analytes quantitated using IS#1, #2, #4, and #6 in Samples S1-5, S1-5 FB, and S6-5 are flagged as estimated until and unless documentation of the manual integrations used to establish the calibrations is provided for review.

#### В. Continuing

SBLK1 was run immediately following the 6/9-10 IC, with no separate continuing calibration (CC) standard. This is an accepted practice; no data are affected.

Sample S1-5 and its MS/MSD were run immediately following the 6/11 IC with no separate CC standard. No data are affected.

Samples S6-5 and S1-5 FB were also run under a CC standard on 6/12/91. Criteria were met for this calibration with the exception of the Response Factor (RF) for 3,3'-dichlorobenzidine (0.048, criterion 0.050), and %D for benzoic acid (31.8), 2,4,5-trichlorophenol (28.5), and 3,3'-dichlorobenzidine (26.0). Detection limits for 3,3'-dichlorobenzidine are rejected in S6-5 and S1-5 FB due to the low RF, indicating poor sensitivity to this compound. No other data are affected.

#### IV. Blanks

No target or tentatively identified compounds were reported in SBLK1, extracted 5/8 and analyzed 6/10.



No target or tentatively identified compounds were detected in the field blank, S1-5 FB, extracted 5/8 and analyzed 6/12.

#### V. Surrogate Recovery

Recovery of nitrobenzene-d5 was low (31%) in S1-5 FB (QC limits 35-114%). This surrogate was quantitated using an undocumented manual area in this sample. All other surrogate recoveries were within established acceptance criteria. No qualifiers are applied.

#### VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample S1-5. Percent Recovery (%R) was low for 4-nitrophenol in both the MS and the MSD, at 4% and 8%, respectively (QC limits 10-80%); the Relative Percent Difference (RPD) for this spike compound was also outside the QC limit of 50%, at 54%. The detection limit for 4-nitrophenol in the unspiked sample S1-5 is rejected; no other data are affected.

#### VII. Field Duplicates

No field duplicate pair was included with this SDG.

#### VIII. Internal Standards Performance

Areas for IS#5 and IS#6 in Sample S1-5 were below the minimum acceptable limits; quantitation limits for all analytes quantitated using these IS's are estimated. In addition, areas for IS#5 and IS#6 were just above the minimum limits in S6-5 and S1-5 FB; in the latter sample, IS#4 was also very low, though still just within the minimum limit. Due to the consistency of the responses for all the samples in this SDG, the detection limits for analytes quantitated using IS#5 and #6 are also estimated in S1-5 FB and S6-5; in S1-5 FB, those analytes quantitated using IS#4 are also estimated.

The Case Narrative included with the data package incorrectly states that all internal standards were within specification for the semivolatile fraction. No re-analyses of these samples were performed.

#### IX. TCL Compound Identification

Compound identifications are properly reported and documented in all cases.



#### X. Compound Quantitation and Reported Detection Limits

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

#### XI. Tentatively Identified Compounds

No TIC's were identified or reported in this SDG.

#### XII. System Performance

The extensive use of manual peak area integration in the standards supporting this SDG suggests either a problem with the software or poor chromatography-specifically, a lack of resolution between the peaks. The latter appears to be at least partly the case: chromatograms for blanks and samples show d6-phenol and d4-1,4-dichlorobenzene to be just barely baseline resolved, and these compounds consistently required manual integration. Further, the drop in area responses for the later-eluting internal standards can also be indicative of a column problem, and should be investigated by the laboratory. Re-analysis of the affected samples was not performed, therefore the observed low areas cannot be attributed to a matrix problem. Ideally, re-analysis on a different column (or instrument) should have been performed.

#### XIII. Overall Assessment

Sample results should be used with caution due to the large number of manual integrations used by the laboratory, until and unless documentation of these integrations is provided for review. The following qualifiers are also applied:

- 1. Detection limits for 3,3'-dichlorobenzidine are rejected in Samples S6-5 and S1-5 FB due to a low RF in the continuing calibration standard.
- 2. The detection limit for 4-nitrophenol is rejected in Sample S1-5 due to its recovery at less than 10% in the MS/MSD for this sample; no other samples were analyzed on the same day, therefore no other samples are similarly qualified.
- 3. Non-detects for all analytes quantitated using IS#5 and IS#6 are flagged as estimated (UJ) in Samples S1-5, S1-5 FB, and S6-5 due to the areas for these IS's dropping to below or just above the minimum acceptable area in each case. Analytes quantitated using IS#4 are similarly qualified in S1-5 FB.



4. Results for all analytes quantitated using IS#1, #2, #4, and #6 in all three samples in this SDG are flagged as estimated pending documentation of manual integrations being made available for review.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:

- 1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.
- 2. Transfer signatures are incomplete: no "Accepted by" signature is present for the first signature pair, and no "Relinquished by" signature is present for the second pair; neither of the signatures that is present include the affiliation of the person involved.
- 3. Several corrections (cross-outs and write-overs) are made on the forms; none are initialled or dated.
- 4. Multiple entries for the same sample(s) are confusing, especially when the sample identifications are exactly the same and the time of collection changes. This actually implies that different samples are being analyzed for the different parameters listed, even though they are given the same identification. How the data will ultimately be used should be carefully considered when planning and documenting sample collection events.
- 5. MS/MSD analyses are a <u>laboratory-initiated</u> quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used and to confirm that the integration was consistent in both standards and samples, where applicable. This is especially important when areas for internal standards and/or surrogates are involved, as the quantitation of multiple target analyte results is directly affected when a single IS area is manually integrated.

### SEMIVOLALLE ORGANICS ANALYSIS DATA SHEET

si750 U 2 3

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3114.7

3ample wt/vol: 1000. (g/mL) ML Lab File ID: D2641

Level: (low/med) LOW Date Received: 5/ 3/91

: Moisture: not dec.100. dec. 0. Date Extracted: 5/8/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/11/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

	(-3, -	2 02 03, 13, 12, 2
108-95-2	Phenol	10. 05
111-44-4	bis(2-Chloroethyl)ethe	
95-57-8	2-Chlorophenol	10. 0
541-73-1	1,3-Dichlorobenzene	10. 0
106-46-7	1,4-Dichlorobenzene	10. 0
	Benzyl alcohol	10. 0
	1,2-Dichlorobenzene	10 1
	2-Methylphenol	10. U
108-60-1	bis(2-Chloroisopropyl)	ether 10. U
106-44-5	4-Methylphenol	ί 10. ΙΠΙ
621-64-7	N-Nitroso-di-n-propyla	mine 10. U
67-72-1	Hexachloroethane	10. 0
98-95-3	Nitrobenzene	10. 0
78-59-1	Isophorone	10. U 10. U 10. U 10. U 10. U
88-75-5	2-Nitrophenol	10. 0
105-67-9	2,4-Dimethylphenol	10. 0
65-85-0	Benzoic acid	50. U
111-91-1	bis(2-Chloroethoxy)met	hane 10. U
120-83-2	2,4-Dichlorophenol	10. U
120-82-1	1,2,4-Trichlorobenzene	10. U
91-20-3	Naphthalene	10. 0
106-47-8	4-Chloroaniline	10. 0
87-68-3	Hexachlorobutadiene	10. 0
59-50-7	4-Chloro-3-methylpheno	1 10.  U\/
91-57-6	2-Methylnaphthalene	10. UJ
77-47-4~==		ene iù.  Û
88-06-2	2,4,6-Trichlorophenol	10. U
95-95-4	2,4,5-Trichlorophenol	50. U
91-58-7	2-Chloronaphthalene	10. 0
88-74-4	2-Nitroaniline	50. U
131-11-3	Dimethylphthalate	10. U
208-96-8	Acenaphthylene	10. 0
606-20-2	2,6-Dinitrotoluene	10. U

SEMIVOLA' LE ORGANICS ANALYSIS DATA SHEET

00024 Contract:

ab Name: PACE

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Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Lab Sample ID: 3114.7 atrix: (soil/water) WATER

Lab File ID: D2641 oample wt/vol: 1000. (g/mL) ML

Level: (low/med) LOW Date Received: 5/ 3/91

Moisture: not dec.100. Date Extracted: 5/8/91 dec.

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/11/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L CAS NO. COMPOUND 0

99-09-2	3-Nitroaniline	50.	ט
83-32-9	Acenaphthene	10.	ט
51-28-5	2,4-Dinitrophenol	50.	D _
100-02-7	4-Nitrophenol	-50-	<del>- ㅁ</del> '尺
	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	ש
84-66-2	Diethylphthalate	10.	ס
7005-72-3	4-Chlorophenyl-phenylether_	10.	ש
86-73-7	Fluorene	10.	U
	4-Nitroaniline	50.	ט
534-52-1	4,6-Dinitro-2-methylphenol	50.	UJ
86-30-6	N-Nitrosodiphenylamine	10.	וש
101-55-3	4-Bromophenyl-phenylether	10.	ן ס
118-74-1	Hexachlorobenzene	10.	ן ט
87-86-5	Pentachlorophenol	50.	
	Phenanthrene	10.	ע ע
	Anthracene	10.	101
84-74-2	Di-n-butylphthalate	10.	ן ס
206-44-0	Fluoranthene	10.	שַׁעַן ע
129-00-0		10.	ס ס
85-68-7	Butylbenzylphthalate	10.	ן ס ן
91-94-1	3,3'-Dichlorobenzidine	20.	ן ט
56-55-3	Benzo(a)anthracene	10.	ן ט ן
218-01-9	Chrysene	10.	ס
	bis(2-Ethylhexyl)phthalate	10.	ן ט
117-84-0	Di-n-octylphthalate	10.	ָׁ ע ( `
205-99-2	Benzo(b) fluoranthene	lū.	บี
207-08-9	Benzo(k) fluoranthene	10.	ס
50-32-8	Benzo(a)pyrene	10.	ט
193-39-5	Indeno(1,2,3-cd)pyrene	10.	ט
53-70-3	Dibenzo(a,h)anthracene	10.	ט
191-24-2	Benzo(g,h,i)perylene	10.	עש

FORM I BV-2

#### SEMIVOLA' LE ORGANICS ANALYSIS DATA SHEET TE.\_ATIVELY IDENTIFIED COMPOUNDS

ab Name: PACE

Contract:

81-5

Lab Code: PACE

Case No.: EPC SAS No.:

BDG No.:

'atrix: (soil/water) WATER

Lab Sample ID: 3114.7

sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2641

evel: (low/med) LOW

Date Received: 5/ 3/91

" Moisture: not dec.100.

Number TICs found:

dec. 0.

Date Extracted: 5/8/91

Lxtraction: (SepF/Cont/Sonc) SEPF

0

Date Analyzed: 6/11/91

PC Cleanup:

(Y/N) N

pH: 7.0

Dilution Factor:

1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	ç
1.				
2.	<del></del>	-		
3.			<del></del>	
4.				
5.				
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,		-	<del> </del>	
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FORM I SV-TIC

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SEMIVOLA\_\_LE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE

8175) FB 9 Contract:

Case No.: EPC BDG No.: Lab Code: PACE SAS No.:

Matrix: (soil/water) WATER Lab Sample ID: 3118.0

Lab File ID: D2653 3ample wt/vol: 1000. (g/mL) ML

Date Received: 5/ 3/91 Level: (low/med) LOW

Moisture: not dec.100. dec. 0. Date Extracted: 5/8/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

pH: 7.0 :PC Cleanup: (Y/N) N Dilution Factor: 1.00

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

UJ 10. 108-95-2----Phenol 111-44-4----bis(2-Chloroethyl)ether 10. U 95-57-8----2-Chlorophenol U 10. 541-73-1----1,3-Dichlorobenzene U 10. 106-46-7----1,4-Dichlorobenzene 10. U U 100-51-6----Benzyl alcohol 10. 95-50-1----1,2-Dichlorobenzene U 10. 95-48-7----2-Methylphenol 10. U 108-60-1----bis(2-Chloroisopropyl)ether U 10. 106-44-5----4-Methylphenol U 10. 621-64-7----N-Nitroso-di-n-propylamine 10. U U 67-72-1-----Hexachloroethane\_ 10. U 98-95-3----Nitrobenzene 10. 78-59-1-----Isophorone 10. U 88-75-5----2-Nitrophenol U 10. U 105-67-9----2,4-Dimethylphenol 10. U 65-85-0----Benzoic acid 50. 111-91-1----bis(2-Chloroethoxy)methane 10. U 120-83-2----2,4-Dichlorophenol 10. U 120-82-1----1,2,4-Trichlorobenzene 10. U 91-20-3----Naphthalene U 10. 106-47-8----4-Chloroaniline U 10. U 87-68-3----Hexachlorobutadiene 10. 59-50-7----4-Chloro-3-methylphenol υΨ 10. 91-57-6=====--2-Methylnaphthalene 10. บัป 77-47-4-----Hexachlorocyclopontadiene 10.  $\overline{\mathbf{c}}$ 88-06-2----2,4,6-Trichlorophenol 10. U 95-95-4----2,4,5-Trichlorophenol 50. U U 91-58-7----2-Chloronaphthalene 10. 88-74-4----2-Nitroaniline 50. U 131-11-3----Dimethylphthalate 10. U 208-96-8-----Acenaphthylene 10. D U 606-20-2----2,6-Dinitrotoluene 10.

### SEMIVOLA LE ORGANICS ANALYSIS DATA SHEET

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Lab Name: PACE Contract:

81-5 FB

SDG No.:

Lab Code: PACE Case No.: EPC SAS No.:

Matrix: (soil/water) WATER Lab Sample ID: 3118.0

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2653

Level: (low/med) LOW Date Received: 5/3/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/8/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

OND NO.	COMPOUND (U	g/h or ug/r	.g, 00/1	¥
99-09-2	3-Nitroaniline		50.	ט
83-32-9	Acenaphthene		10.	ט
51-28-5	2,4-Dinitrophenol		50.	ט
100-02-7	4-Nitrophenol		50.	ט
132-64-9	Dibenzofuran		10.	ַ
121-14-2	2,4-Dinitrotoluene	,	10.	U
84-66-2	Diethylphthalate		10.	ן ט
7005-72-3	4-Chlorophenyl-phen	vlether	10.	U
86-73-7	Fluorene	· —	10.	שׁ
100-01-6	4-Nitroaniline		50.	Ū
	4,6-Dinitro-2-methy	lphenol	50.	UJ
86-30-6	N-Nitrosodiphenylam	ine	10.	ו ס
101-55-3	4-Bromophenyl-pheny	lether	10.	ם ם ם
118-74-1	Hexachlorobenzene		10.	י ט
87-86-5	Pentachlorophenol _		50.	ט .
85-01-8	Phenanthrene		10.	IUI
120-12-7	Anthracene		10.	ם ם
84-74-2	Di-n-butylphthalate		10.	י שו
206-44-0	Fluoranthene		10.	ן ט
129-00-0	Pyrene		10.	U
85-68-7	Butylbenzylphthalate	3	10.	U↓
91-94-1	3,3'-Dichlorobenzid	ine	20.	10- F
56-55-3	Benzo(a) anthracene		10.	UJ
218-01-9	Chrysene		10.	<b>ט</b> ו
117-81-7	bis(2-Ethylhexyl)phi	halate	10.	וט
117-84-0	Di-n-octylphthalate		10.	0
205-99-2	Benze (b) fluoranthen	,———	10.	0
207-08-9	Benzo(k) fluoranthene		10.	Ū
50-32-8	Benzo(a)pyrene		10.	ן ס
193-39-5	Indeno(1,2,3-cd)pyre	ene	10.	U
53-70-3	Dibenzo(a,h)anthrace	ne	10.	0
191-24-2	Benzo(g,h,i)perylene	5	10.	υΨ
- Cannot be	separated from dipheny	lamine		1

FORM I SV-2

#### 1F SEMIVOLA! LE ORGANICE ANALYSIS DATA SHEET TEN\_ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

81-5 FB

ab Name: PACE

cample wt/vol:

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3118.0

1000. (q/mL) ML Lab File ID: D2653

Level: (low/med) LOW

Date Received: 5/ 3/91

Moisture: not dec.100.

dec. 0.

Date Extracted: 5/8/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1:				
3.4.				
5				
7				
10.				
12:———				
14				
15				
17.				
20.				
21				
24				
26.				
88.				
9				
		l		

FORM I SV-TIC

#### 1B SEMIVOLA'L LE ORGANICS ANALYSIS DATA SHEET

PACE Contract: \$6-5 15

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC 8AS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3122.8

3ample wt/vol: 1000. (g/mL) ML Lab File ID: D2650

Level: (low/med) LOW Date Received: 5/ 3/91

; Moisture: not dec.100. dec. 0. Date Extracted: 5/8/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

JPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

108-95-2		10.	La
111-44-4	bis(2-Chloroethyl)ether	10.	וסו
95-57-8	2-Chlorophenol	10.	ן ט
541-73-1	1,3-Dichlorobenzene	10.	ט
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	ט
95-50-1	1,2-Dichlorobenzene	10.	ן ט
95-48-7	2-Methylphenol	10.	U
108-60-1	bis(2-Chloroisopropyl)et	her 10.	ס
106-44-5	4-Methylphenol	10.	ט
621-64-7	N-Nitroso-di-n-propylami:	ne 10.	<b>ט</b>
67-72-1	Hexachloroethane		ט
98-95-3	Nitrobenzene	10.	ן ס ן
78-59-1	Isophorone	10.	ן ט
88-75-5	2-Nitrophenol	10.	U .
105-67-9	2,4-Dimethylphenol	10.	ע
65-85-0	Benzoic acid	50.	ם ם ם ם
	bis(2-Chloroethoxy)methan	ne 10.	ט
120-83-2	2,4-Dichlorophenol		ן ס
120-82-1	1,2,4-Trichlorobenzene	10.	ן ט ן
91-20-3	Naphthalene	10.	ט
106-47-8	4-Chloroaniline	10.	ן ס
87-68-3	Hexachlorobutadiene	10.	ן ט
59-50-7	4-Chloro-3-methylphenol	10.	עש
91-57-6	2-Methylnaphthalene	10.	UJ
77-47-4	Hexachlorocyclopentadiene	10.	<b>ט</b>
88-06-2	2,4,6-Trichlorophenol	10.	ס
95-95-4	2,4,5-Trichlorophenol	50.	ט
91-58-7	2-Chloronaphthalene		<b>ט</b>
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	ש
208-96-8	Acenaphthylene	10.	ט
606-20-2	2,6-Dinitrotoluene	10.	۱v

FORM I SV-1

# SEMIVOLAT E ORGANICS ANALYSIS DATA SHEET

ab Name: PACE Contract:

nab Code: PACE Case No.: EPC SAS No.: SDG No.:

Lab Sample ID: 3122.8

^ample wt/vol: 1000. (g/mL) ML Lab File ID: D2650

Level: (low/med) LOW Date Received: 5/ 3/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/8/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	(ug/L or	ug/kg)	OG/ L	Q
	3-Nitroaniline			50.	ט
83-32-9	Acenaphthene		<del></del>	10.	U
51-28-5	2,4-Dinitropheno	1		50.	ס
100-02-7	4-Nitrophenol		_	50.	ט
132-64-9	Dibenzofuran	***************************************		10.	ס
121-14-2	2,4-Dinitrotolue	ne		10.	ס
84-66-2	Diethylphthalate		<del>-</del>	10.	<b>ט</b>
7005-72-3	4-Chlorophenyl-p	henylether	_	10.	ט
86-73-7	Fluorene	-	_	10.	ט
100-01-6	4-Nitroaniline			50.	שׁ
534-52-1	4,6-Dinitro-2-me	thylphenol		50.	UJ
86-30-6	N-Nitrosodipheny	lamine		10.	י ס ו
101-55-3	4-Bromophenyl-ph	enylether		10.	ן ס ן
118-74-1	Rexachlorobenzen	e		10.	ט
87-86~5	Pentachloropheno	1	— <sub>I</sub>	50.	ט
85-01-8	Phenanthrene			10.	ט
120-12-7	Anthracene		<u> </u>	10.	י סו
84-74-2	Di-n-butylphthal	ate		10.	ן סן י
206-44-0	Fluoranthene			10.	עטו
129-00-0	Pvrene	· · · · · · · · · · · · · · · · · · ·	— <u>I</u>	10.	口丁
85-68-7	Butvlbenzylphtha	late	<del></del> 1	10.	UJ
91-94-1	3,3'-Dichloroben	zidine	_	<del>-20</del>	10 K
56-55-3	Benzo(a) anthrace	ne ——		10.	UJ
218-01-9	Chrysene		— I	10.	ם ם
117-81-7	bis(2-Ethylhexyl	) phthalate	<del></del>	10.	<b>ט</b>
117-84-0	Di-n-octylphthal	ate	' j	10.	י וטו
205-99-2	Benzo(b) fluorant	hene		10.	וסו
207-08-9	Benzo(k) fluorant	hene		10.	ן ס
50-32-8	Benzo(a)pyrene	<del></del>		10.	וטו
193-39-5	Indeno(1,2,3-cd)	pyrene		10.	ן ס
53-70-3	Dibenzo(a,h)anth	racene	<u> </u>	10.	ן ט
	Benzo(g,h,i)pery		<u> —</u> I		

FORM I SV-2

# SEMIVOLA" 'E ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TEN\_ATIVELY IDENTIFIED COMPOUNDS

ab Name: PACE

Contract:

() () () () ()

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

atrix: (soil/water) WATER Lab Sample ID: 3122.8

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2650

Level: (low/med) LOW Date Received: 5/ 3/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/8/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

			<u> </u>	<u> </u>
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
4.				
' '		l		<u> </u>
5.		l <del></del>	<del></del>	<u> </u>
••				
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9.		ļ <del></del>		<del></del>
10.				
<u> </u>			•	
12.				
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, = -				

FORM I SV-TIC



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
INORGANIC ANALYSES DATA

Samples Collected 5/2/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

Lead and selenium in S1-5 and selenium in S6-5 were qualified estimated. Results for barium, chromium, selenium, silver, and thallium were qualified estimated. Iron data were qualified as less than the reported values.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (7/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.



These codes are used on the accompanying data summary sheets to qualify some of the results.



### Inorganic Data Validation

for

### Environmental Project Control, Inc.

### Samples Collected 5/2/91

#### Case Narrative

This group contained five water samples including two field blanks. All of the samples were analyzed for total metals except for S1A-3 which was analyzed for only iron and manganese.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
S1-5	3113	5/2/91
S1~5FB	3118	5/2/91
S1A-3	3120	5/2/91
S6-5	3121	5/2/91
S6-5FB	3126	5/2/91

 ${\it S6-5FB}$  was not listed on the cover page but data were included in the data package.



### The areas reviewed during validation are listed below.

### CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
    - X. Detection Limits
  - XI. Sample Result Verification
- XII. Overall Assessment



#### Data Validation

#### I. Holding Times

All metals analyses were conducted within acceptable holding times.

#### II. Calibration

Calibrations for metals were generally satisfactory.

No run log was included in the data package for the ICP analyses, and insufficient notations were made on the raw data to indicate when the samples were analyzed. If the handwritten notations at the bottom of some of the raw results were meant to indicate the times of analyses, a single run apparently took 5-7 minutes. The number of samples analyzed between CCV's and CCB's should not exceed ten which should cover an elapsed time of 50 to 70 minutes. CCV2 was apparently analyzed at 15:03 while CCV3 was analyzed at 16:59 - a difference of almost two hours. Since all of the runs in this time interval were not included in the data package, it was not known if the ten sample limit between CCV's was exceeded. No data were qualified as a result of this problem.

CRDL recoveries were 75% for chromium and 45% for silver. Chromium and silver results were qualified estimated.

#### III. Blanks

Iron exceeded the CRDL in the field blank, S1-5FB; zinc exceeded the CRDL in the field blank, S6-5FB. Copper was also found in S6-5FB at slightly above the IDL. No zinc data were qualified. Copper and iron data were qualified as less than the reported values.

The method blank was clean.

The ICB for lead was slightly above the IDL; a CCB for antimony was less than the negative IDL. No data required qualification.

#### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.



#### v. Matrix Spike Sample Analysis

Matrix spikes were conducted on S1-5 and S6-5. Recoveries were out of acceptable limits in S1-5 for barium (59%), lead (74%), selenium (70%), and thallium (69%). Recoveries were out of acceptable limits in S6-5 for barium (55%), selenium (71%), silver (70%), and thallium (66%). The post-digest spikes for barium were satisfactory (105% and 112%). Results for barium, selenium, silver, and thallium were qualified estimated.

#### VI. Duplicate Sample Analysis

Duplicate analyses were conducted on S1-5 and S6-5. Results were satisfactory.

#### VII. Laboratory Control Sample Analysis

LCS results were satisfactory.

#### VIII. Furnace Atomic Absorption Analysis

The analytical spike for antimony in S6-5 FB was not verifiable since the raw data were not copied well. No data were qualified.

Analytical spikes in S1-5 were out of acceptable limits for lead (81%), selenium (79%), and thallium (84%). Analytical spikes in S6-5 were out of acceptable limits for selenium (71%) and thallium (84%). Selenium was also out of acceptable limits in S1-5D (82%) and S6-5D (73%). Lead and selenium in S1-5 and selenium in S6-5 were qualified estimated.

### IX. ICP Serial Dilution Analysis

Serial dilution analyses were conducted on S1-5 and S6-5. Results were satisfactory.

#### X. Detection Limits

The IDL for mercury was equal to the CRDL but no data were qualified. All other IDL's were less than their respective IDL's.



### XI. Sample Result Verification

Calculations were performed correctly.

#### XII. Overall Assessment

Metals data were considered valid with the following exceptions:

Lead and selenium in S1-5 and selenium in S6-5 were qualified estimated due to analytical spike results.

Results for barium, selenium, silver, and thallium were qualified estimated due to matrix spike recoveries.

Iron data were qualified as less than the reported values due to field blank contamination.

Chromium and silver results were qualified estimated due to poor CRDL recoveries.

Site Name. Wells G & H

## WATER SAMPLES

(ug/L)

Case # 810503.503

Sampling Date(s): 5/2/91

:	Sample No	3113		3118		3120		3121		3126		<del></del>			<del></del>	==		ſ			
Dilu	ition Factor	1		1	}	1		1		1											
	Location	S1-5		S1-5FE	3	S1A-3		S6-5		S6-5FI	3									) ————————————————————————————————————	
	Lab ID																		-		
					}																
CRDL.													_	L							_ }
200	Aluminum					N/R									T -	[	T	Ī	Ţ		
60	Antimony					N/R															
10	*Arsenic					N/R															
200	Barium	22.0	J			N/R		24.0	J												
5	Beryllium					N/R															
5	*Cadmium					N/R															
5000	Calcium	86400				N/R		84000													
10	*Chromium	9.5	UJ	9.5	UJ	N/R		9.5	UJ	9.5	UJ								1		
50	Cobalt					N/R															
25	Copper	11.0	U			N/R		14.0	U	5.0											
100	Iron	243	U	133				149	U												
3	*Lead	2.6	J			N/R															
5000	Magnesium	11000				N/R		10800													
	Manganese	30.0				9.0		13.0	<u></u>												
0.2	Mercury					N/R															
40	*Nickel					N/R															
5000	Potassium	3000			<u> </u>	N/R	Ì	3120													
5	Selenium	0.5	UJ		<u> </u>	N/R	 	0.5	UJ.				<u>.</u>								
	Silver	10	J	8.1	UJ	N/R		140	J	8.1	UJ										
5000	Sodium	111000				N/R		105000		396											
10	Thallium	0.7	UJ		<u> </u>	N/R		07	UJ												
50						N/R															
20		193		100		N/R		116		21.0											
10	*Cyanide	N/R		N/R		N/R		N/R		N/R			1	]		1					

\*Action Level Exists

N/R = Not Required

### U.S. EPA - CLP

			INORGANIC A	1 NALYSES DATA :	SHEET	EPA SAMPLE NO.
				<b></b>	00023	S1-5
) Name	e: PACE	_INCORPORAT	'ED	Contract: E	PC	·
ን Code	e:	Ca	se No.:	SAS No.	:	SDG No.: S1-5_
trix (	(soil/w	ater): WATE	R		Lab Samp	ole ID: 3113.9
el (l	Low/med	): LCW_	_		Date Rec	eived: 05/03/91
Solids	5:		0			
	Co	ncentration	Units (ug/	L or mg/kg dry	y weight)	: UG/L_
		CAS No.	Analyte	Concentration	C Q	М
		7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-92-1 7439-95-4 7439-95-4 7439-97-6 7440-02-0 7440-22-4 7110-23-5 7110-28-0	Aluminum_Antimony_Arsenic_Barium_Beryllium Cadmium_Calcium_Chromium_Cobalt_Copper_Iron_Lead_Magnesium Manganese Mercury_Nickel_Potassium Selenium_Silver_Sodium_Thallium_Vanadium_Zinc_Cyanide_Carium_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companide_Companid	6.4 11.0 243 2.6 11000 30.0 0.20 8.6 3000 0.50 10 111000 0.70	D U U U U U U U U U U U U U U U U U U U	P F F P P P P P P P P P P P P P P P P P
lor Be	fore:	CCLORLESS	Clarity	y Before: CLEA	AR_	Texture:
.∍r Af	ter:	CCLORLESS	Clarity	After: CLEA	LR_	Artifacts:
ents						

## U.S. EPA - CLP

EPA SAMPLE NO.

		INORGANIC .	ANALYSES DATA	SHE	ET			
					000	2 4		
	AGE THOODDODA	ren	Control 1	220		-1.	S1-5FB	1
Name: PA	ACE_INCORPORAT	ED	Contract: 1	EPC_				i
Code: _	Ca	se No.:	SAS No.	·: _		SDG	No.: S1-	5
trix (soil	L/water): WATE	CR CR		La	b Samp	le ID	: 3118.0_	
el (low/m	ned): LOW_	_		Da	te Rec	eived	: 05/03/91	L
Solids:		υ						
	<del></del>	•						
	Concentration	Units (ug,	/L or mg/kg dr	cy w	eight)	: UG/	L_	
	1	<del></del>		- Т		<del></del> 1		
	CAS No.	Analyte	Concentration		Q	м		
	7429-90-5	Aluminum	195	-   _		P		
	7440-36-0	Antimony	0.80	1 ·				
	7440-38-2	Arsenic	1.0	- I - I -		F_ F_		
	7440-39-3	Barium	12.5	1 .		P_		
	7440-41-7	Beryllium	1.1			P_	_	
	7440-43-9	Cadmium	3.0			P	ø	
	7440-70-2	Calcium	448			P_ P_		
	7440-47-3	Chromium	9.5		J	P		
	7440-48-4	Cobalt	6.4	ַ   U		P		
	7440-50-8	Copper	4.5	ט		P_		
	7439-89-6	Iron	133			P_		
	7439-92-1	Lead	0.50			F_		
	7439-95-4	Magnesium	509_			P_		
		Manganese	1.5_			P_		
		Mercury	0.20_			CV		
	1	Nickel	8.6_			P_		
		Potassium	760_			P_		
		Selenium_	0.50_	ַ   ט		F_		
		Silver	8.1	U	ــــــــــــــــــــــــــــــــــــــ	F P P		
		Sodium	390_			P_		
		Thallium_	0.70_	- 1 -		F_ P		
		Vanadium_	4.2_	.[빗.				
	7440-66-6	Zinc	10_	·   b   -		P		
		Cyanide	<del></del>	. - -		NR		
		lI		.1_1-	i	!		
or Before	: CCLORLESS	Clarit	y Before: CLE	AR_		Textu	re:	
c: After:	COLORLESS	Clarit	y After: CLE	AR_		Artif	acts:	
rants:								
						<del></del>		
								,

		U.S.	EPA - CLP		
		INORGANIC .	1 ANALYSES DATA :	SHEET	EPA SAMPLE NO.
o Name: PACE	INCORPORAT	ED	Contract: E	0	S1A-3
					SDG No.: S1-5
acrix (soil/v	water): WATE	R		Lab Samp	le ID: 3120.1
e 'el (low/med	i): LOW_	_		Date Rec	eived: 05/03/91
Solids:		0			
Co		<u> </u>	/L or mg/kg dry		
	7440-43-9 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6	Aluminum_ Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Calcium_ Chromium_ Cobalt_ Copper_ Iron_ Lead_ Magnesium Manganese Mercury_ Nickel_ Potassium			NR
lor Before:	COLORLESS	Clarit	y Before: CLEA	R_	Texture:

lor Before:	COLORLESS	Clarity Before:	CLEAR_	Texture:
l r After:	COLORLESS	Clarity After:	CLEAR_	Artifacts:
mments:				

## U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO

or Before:	7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6	Potassium Selenium Silver Sodium Thallium Vanadium Zinc Cyanide	0.50 14.0 105000 0.70	ש – ש ש – ש R	<del>-</del>	P_ P_ F_ P_ P_ NR Texture:
or Before:	7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6	Potassium Selenium Silver Sodium Thallium Vanadium Zinc Cyanide	3120 0.50 14.0 105000 0.70 4.2 116	ם ם ם – ם	W	P_ F_ P_ P_ F_ P_ NR
	7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2	Potassium Selenium Silver Sodium Thallium Vanadium Zinc	3120 0.50 14.0 105000 0.70 4.2	a - a		P_ F_ P_ P_ F_
	7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2	Potassium Selenium Silver Sodium Thallium Vanadium Zinc	3120 0.50 14.0 105000 0.70 4.2	a - a		P_ F_ P_ P_ F_
	7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2	Potassium Selenium Silver Sodium Thallium Vanadium	3120 0.50 14.0 105000 0.70 4.2	a - a		P_ F_ P_ P_ F_
	7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0	Potassium Selenium Silver Sodium Thallium	3120 0.50 14.0 105000 0.70	a - a		P_ F_ P_ P_ F_
	7440-09-7 7782-49-2 7440-22-4 7440-23-5	Potassium Selenium_ Silver_ Sodium_	3120 0.50 14.0 105000	ช บ -		P_ F_ P_ P
	7440-09-7 7782-49-2 7440-22-4	Potassium Selenium Silver	3120 0.50 14.0	B		P_ F_ P
	7440-09-7 7782-49-2	Potassium Selenium	3120 0.50	B		P_ F_
	7440-09-7	Potassium	3120	B		P_
						· — ·
	7440-02-0	ו איז רייאו		U		
	7439-97-6	MercuryNickel		U		CV
	7439-96-5	Manganese		Ē		P_
	7439-95-4	Magnesium	10800_	<u>-</u> _		P_
	7439-92-1	Lead	0.50_	U		F_
	7439-89-6	Iron	149_	_	<u> </u>	P
	7440-50-8	Copper		8	<u>u</u>	P
	7440-48-4	Cobalt	6.4_	U		P_
	7440-47-3	Chromium_	9.5	Ū	<u></u>	P_
	7440-70-2	Calcium_	84000	_		P_
	7440-43-9	Cadmium	3.0	U		P_
	7440-41-7	Beryllium	1.1_	U		P_
	7440-39-3	Barium		B		P_
	7440-38-2	Arsenic	1.0_	U	]	F_
	7440-36-0	Antimony_		U	]	F_
	7429-90-5	Aluminum_	195_	U		P_
				_		
	CAS No.	Analyte	Concentration	C	Q	M
C	Concentration	Units (ug,	/L or mg/kg dr	У	weight)	: UG/L_
Solids:	**************************************	_0				
el (low/me	ed): LOW_	<del>-</del>		D	ate Rec	eived: 05/03/9
rix (soil,	/water): WATE	l:R		L	ab Samp	le ID: 3121.0_
Code:	<del></del>	se No.:	SAS No.			
Name: PACE_INCORPORATED			Contract: FDC			S6-5
					00026	



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING

PESTICIDES/PCBS ANALYSIS DATA

Samples Collected 05/02/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in the pesticide/PCB fraction.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable. (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Data Validation for Environmental Project Control, Inc.

Samples Collected May 2, 1991

Pesticide/PCB Analyses Data

#### Case Narrative

Three treatment system samples were collected on May 2, 1991 and submitted to Pace, Inc. on May 3, 1991. The laboratory was requested to perform pesticide/PCB target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the 4°C  $\pm$  2°C range may adversely affect the more volatile compounds.

No TCL compounds were detected in the pesticide/PCB fraction.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3114	S1-5	05/02/91
3118	S1-5FB	05/02/91
3122	S6-5	05/02/91

The areas reviewed during validation are listed below.



### ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment of Data for a Case



#### DATA VALIDATION

#### I. Sample Holding Times

All samples were extracted and analyzed within holding times.

#### II. Instrument Performance

DDT retention time was greater than or equal to 12 minutes.

Retention time windows were reported on Form IX for each column used.

Retention times and calibration factors were accurately recorded on Form IX.

DDT/Endrin degradation was less than 20%.

DBC retention time met the 1.5% criteria for wide-bore capillary columns on the DB-5 and DB-608 columns.

#### III. Calibration

#### Initial Calibration Linearity Check Inst V63400 05/13-15/91

Both columns met the 10% relative standard deviation (%RSD) criteria.

### Analytical Run Sequence

All standards were run within 72 hours.

#### Continuing Calibration

The column used for quantitation met the 15% D criteria.

The column used for confirmation met the 20% D criteria.

#### IV. Blanks

No TCL compounds were detected in BLKW06 or BLKW07.



#### V. Surrogate Recovery

Surrogate recoveries were acceptable.

#### VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike recoveries for the following compounds were outside the established advisory limits:

gamma-BHC (51%)
heptachlor (5%)
endrin (14%)

Matrix spike duplicate recoveries for the following compound was outside established advisory limits:

gamma-BHC (52%)

This compound was not detected in the unspiked sample but the non-detect for heptachlor was qualified as an estimate in Sample S1-5. No other data were qualified.

Heptachlor and endrin failed to meet RPD criteria. These compounds were not detected in the unspiked sample and the non-detect for heptachlor was previously qualified. No other data have been qualified.

#### VII. Field Quality Control Samples

S1-5FB is a field blank. No TCL compounds were detected.

#### VIII. Internal Standards Performance

Standard performance based on the retention time windows was acceptable.

#### IX. TCL Compound Identification

No target compounds were detected.

#### X. Compound Quantitation and Reported Detection Limits

Detection limit quantifications were acceptable with regard to supporting data.



- XI. Tentatively Identified Compounds

  Not Applicable.
- XII. System Performance

  System performance was acceptable.
- XIII. Overall Assessment of Data for a Case

  No TCL compounds were detected.

#### 10 PEST-CIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO. **31-5** 3114

ab Name: PACE Contract: EPC

Case No.: ib Code: PACE

SAS No.:

SDG No.:

fatrix: (soil/water) WATER

Lab Sample ID:

mple wt/vol:

1000. (g/mL)ML Lab File ID: V66404

Date Received: 5/ 3/91

Level: (low/med) LOW

Moisture: hot dec.100.

dec. o.

Date Extracted: 5/ 6/91

wtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 5/14/91

C Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

,		
319-84-6Alpha-BHC 319-85-7Beta-BHC 319-86-8Delta-BHC 58-89-9Gamma-BHC 76-44-8Heptachlor 309-00-2Aldrin 1024-57-3Heptachlor Epoxide 959-98-8Endosulfan I 60-57-1Dieldrin 72-55-9	.050 .050 .050 .050 .050 .050 .050 .10 .10 .10 .10 .10 .50 .50	מממממממממממממממממממממ
12674-11-2Arochlor-1016 11104-28-2Arochlor-1221	.50	ប

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO. 51-5FB 31180029

ab Name: PACE

Contract: EPC

ib Code: PACE

Case No.:

SAS No.:

SDG No.:

latrix: (soil/water) WATER

Lab Sample ID:

mple wt/vol:

1000. (g/mL)ML Lab File ID: V66408

Date Received: 5/ 3/91

evel: (low/med) LOW

Moisture: not dec.100.

Date Extracted: 5/ 6/91

"traction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 5/14/91

rC Cleanup: (Y/N) N

pH: 7.0

dec. Ū.

Dilution Factor:

1.00

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

				<del></del> _
319-84-6Alpha-BHC	ļ		.050	บ
319-85-7Beta-BHC	1		.050	Ū
319-86-8Delta-BHC	1		.050	Ū
58-89-9Gamma-BHC	1		.050	U
76-44-8Heptachlor	1		.050	Ū
309-00-2Aldrin	1		.050	Ū
1024-57-3Heptachlor Epoxide	ì		.050	Ū
959-98-8Endosulfan I	i		.050	Ū
60-57-1Dieldrin	- {		.10	Ū
72-55-94,4'-DDE	- }		.10	บ
72-20-8Endrin	}		.10	Ū
33213-65-9Endosulfan II	)		.10	Ū
72-54-84,4'-DDD	- (		.10	Ū
1031-07-8Endosulfan Sulfate	- 1		.10	U
50-29-34,4'-DDT	1		.10	U
72-43-5Methoxychlor	1		.50	Ū
53494-70-5Endrin Ketone	- [		.10	U
5103-71-9alpha-Chlordane	- 1		.50	U
5103-74-2gamma-Chlordane	- }		.50	U
8001-35-2Toxaphene	1		1.0	U
12674-11-2Arochlor-1016	1		.50	U
11104-28-2Arochlor-1221	[		.50	U
11141-16-5Arochlor-1232	}	_	.50	U
53469-21-9Arochlor-1242	1	•;•	.50	ប
12672-29-6Arochlor-1248	1		.50	Įυ
11097-69-1Arochlor-1254	- 1		1.0	U
11096-82-5Arochlor-1260	- 1		1.0	U
				ł

# PESILCIDE ORGANICS ANALYSIS DATA SHEET

'A SAMPLE NO. 3122

ab Name: PACE Contract: EPC

Case No.: SAS No.: ib Code: PACE

SDG No.:

00035

Lab Sample ID: fatrix: (soil/water) WATER

1000. (g/mL)ML Lab File ID: V66436 mple wt/vol:

Date Received: 5/ 3/91 Level: (low/med) LOW

Moisture: not dec.100. dec. 0. Date Extracted: 5/ 7/91

ptraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 5/15/91

Dilution Factor: -C Cleanup: (Y/N) N pH: 7.0 1.00

CONCENTRATION UNITS: CAS NO. COMPOUND

(ug/L or ug/Kg) UG/L Q

Alpha-BHC Beta-BHC Delta-BHC			.050	U
Beta-BHC Delta-BHC		j		, –
Delta-BHC			.050	U
		- [	.050	Ü
Gamma-BHC			.050	บั
Heptachlor			.050	υ
		f		Ū
	e			Ü
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		ļ		Ū
		-	.10	Ū
		}	.10	U
		ì		U
4,4'-DDD		j		U
	2	ļ		U
4,4'-DDT		}		Ū
		}		Ū
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		1		Ū
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		}		Ū
Arochlor-1221		1		Ū
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	Endosulfan I Dieldrin 4,4'-DDE Endrin Endosulfan II 4,4'-DDD	Heptachlor EpoxideEndosulfan IDieldrin4,4'-DDEEndrin4,4'-DDDEndosulfan II4,4'-DDTMethoxychlorEndrin Ketonealpha-Chlordanegamma-ChlordaneToxapheneArochlor-1211Arochlor-1232Arochlor-1248Arochlor-1254	Heptachlor EpoxideEndosulfan IDieldrin4,4'-DDEEndrin4,4'-DDDEndosulfan II4,4'-DDTMethoxychlorEndrin Ketonealpha-Chlordanegamma-ChlordaneToxapheneArochlor-1221Arochlor-1232Arochlor-1248Arochlor-1254	Heptachlor EpoxideEndosulfan I .050Dieldrin .104,4'-DDE .10Endrin .104,4'-DDD .10Endosulfan II .104,4'-DDT .10Methoxychlor .50Endrin Ketone .10alpha-Chlordane .50Toxaphene .50Toxaphene .50Arochlor-1221 .50Arochlor-1242 .50Arochlor-1248 .50Arochlor-1254 .50



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

AND

AREAL SAMPLING

INORGANIC ANALYSES DATA

Samples Collected 5/2/91-5/16/91

Chemical Analyses Performed By
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

All wet chemistry data is acceptable as modified.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Inorganic Data Validation

for

## Environmental Project Control, Inc.

## Samples Collected 5/2/91-5/16/91

#### Case Narrative

This group contained 19 water samples. Treatment system samples S1-5, S1-5DUP, and S1-5FB were analyzed for total alkalinity, total dissolved solids, and total suspended solids. Treatment system sample S1A-3 was analyzed for total suspended solids. All other samples in this group were analyzed for chloride, nitrite/nitrate, and total organic carbon.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
S1-5	31147	05/02/91
S1-5DUP	31171	05/02/91
S1-5FB	31180	05/02/91
S1A-3	31201	05/02/91
UG16	35681	05/15/91
FDUG16	35690	05/15/91
FBUG16	35720	05/15/91
UC141	35738	05/15/91
UC145	35754	05/15/91
UC72	35762	05/15/91
UC233	35770	05/15/91
G01DB	35789	05/15/91
UG12	35797	05/15/91
UC112	35800	05/15/91
S82	36343	05/16/91
S81S	36351	05/16/91
UC18	36360	05/16/91
UC22	36424	05/16/91
FDUC18	36432	05/16/91

The areas reviewed during validation are listed below.



## Wet Chemistry Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. Matrix Spike Sample Analysis
- V. Duplicate Sample Analysis
- VI. Sample Result Verification
- VII. Other QC
- VIII. Overall Assessment



#### Data Validation

## I. Holding Times

All wet chemistry analyses were conducted within acceptable holding times.

#### II. Calibration

All calibration data were acceptable.

#### III. Blanks

Field blank results are summarized below.

Sample (FB)	<u>Parameter</u>	Result (ppm)
S1-5	Alkalinity TDS	2 3
UG16	TOC	0.42

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value.

No field blanks were provided for samples collected on 15 May or 16 May. Data for these samples should be used with caution.

## IV. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except as noted below (Criteria 75%-125%).

Spiked Sample	<u>Parameter</u>	Recovery (%)
UG16	Chloride	70
UC18	Chloride	30

Positive chloride results and detection limits associated with UG-16 were estimated (U and UJ). Positive chloride results associated with UC-18 were estimated (J).



## V. Duplicate Sample Analysis

Duplicate results were acceptable except as noted below (Criteria RPD  $\pm$  20%).

Duplicate Sample Parameter RPD (%)

TOC

Positive TOC results for samples associated with UC-18 were estimated (J).

67

## VI. Sample Result Verification

Form I's were correct.

## VII. Overall Assessment

UC-18

All data were acceptable with the changes noted above.

G & H	PACE Proj	ect Numl	ber: 810503503
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031147 05/02/91 05/03/91 <u>\$1-5</u>
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Alkalinity, Total Solids, Total Dissolved Solids, Total Suspended	mg/L mg/L mg/L	1 1	78 649 1
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031155 05/02/91 05/03/91 S1-5 MS
INDIVIDUAL PARAMETERS Alkalinity, Total Solids, Total Dissolved	mg/L mg/L	1 1	174 652
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031171 05/02/91 05/03/91 S1-5 DUP
INDIVIDUAL PARAMETERS Alkalinity, Total Solids, Total Dissolved Solids, Total Suspended	mg/L mg/L mg/L	1 1 1	79 696 1
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL	95 0031180 05/02/91 05/03/91 S1-5 FB
INDIVIDUAL PARAMETERS Alkalinity, Total Solids, Total Dissolved Solids, Total Suspended	mg/L mg/L mg/L	1 1 1	2 3 ND
MDL Method Detection Limit ND Not detected at or above the MD	DL.		

G & H

PACE Project Number: 810503503

00029

PACE Sample Number: Date Collected:

Date Received: <u>Parameter</u>

<u>Units</u>

05/02/91 05/03/91

95 0031201

MDL S1A-3

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

1 2

MDL

Method Detection Limit

EPC Wells G&H

PACE Project Number: 810516510

00030

PACE Sample Number: Date Collected:			95 0035681 05/15/91
Date Received:			05/16/91
<u>Parameter</u>	<u>Units</u>	MDL_	<u>UG16</u>

INORGANIC ANALYSIS

Par 7/18/91

MDL Method Detection Limit

EPC Wells G&H	PACE Project Number:	810516510	00031
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	95 0035690 05/15/91 05/16/91 MDL FD UG16	

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS				por
Chloride	mg/L	10	254 J	1218191
Nitrogen, Nitrate plus Nitrite	mg/L	0.2	2.3	7/101
Total Organic Carbon	mg/L	0.10	2.2	

MDL Method Detection Limit



00033 EPC Wells G&H PACE Project Number: 810516510 PACE Sample Number: 95 0035720 Date Collected: 05/15/91 Date Received: 05/16/91 Parameter <u>Uni</u>ts MDL FB UG16 INORGANIC ANALYSIS ND UT pan 7/18/91 INDIVIDUAL PARAMETERS Chloride mg/L Nitrogen, Nitrate plus Nitrite mg/L 0.02 Total Organic Carbon mg/L 0.10 .42 J

MDL Method Detection Limit

F	DC	Wa 1	1 c	G&H

PACE Project Number: 810516511

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Uniţs</u>	MDL	95 0035738 05/15/91 05/16/91 UC141	00034
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon	mg/L mg/L mg/L	10 0.02 0.10	114 J por ND 5.3	7118191

MDL Method Detection Limit

EPC Wells G&H

PACE Project Number: 810516511

PACE Sample Number: Date Collected: 95 0035754 05/15/91

Date Received:

05/16/91

<u>Parameter</u>

Chloride

Units MDL UC145

INORGANIC\_ANALYSIS

INDIVIDUAL PARAMETERS

mg/L 1 57.4 J

Nitrogen, Nitrate plus Nitrite Total Organic Carbon mg/L 0.02 ND mg/L 0.10 .6 7/18/91

MDL

Method Detection Limit

EPC Wells G&H	PACE Project Number:	810516511

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0035762 05/15/91 05/16/91 UC72		
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon	mg/L mg/L ma/L	10 0.2 0.10	199 J 2.5 1.4	pon 7/18/91	

MDL

Method Detection Limit Not detected at or above the MDL. ND

EPC Wells G&H

PACE Project Number: 810516511

PACE Sample Number: Date Collected: 95 0035770 05/15/91

Date Received:

05/16/91

Parameter

Units MDL UC233

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride mg/L 10 476 J percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage percentage pe

MDL

Method Detection Limit

EPC Wells G&H PACE Project Number: 810516511

 PACE Sample Number:
 95 0035789

 Date Collected:
 05/15/91

 Date Received:
 05/16/91

 Parameter
 Units
 MDL
 GO1DB

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Chloride mg/L 10 236  $\sqrt[3]{7}$  Nitrogen, Nitrate plus Nitrite mg/L 0.2 3.6  $\sqrt[3]{7}$  Notal Organic Carbon mg/L 0.10 2.1

MDL Method Detection Limit

-	2	1.1 ~ '	11.	G&H
CI	٠. :	ne	112	υαп

PACE Project Number: 810516511

PACE Sample Number: Date Collected:			95 0035797 05/15/91
Date Received: Parameter	<u>Units</u>	MDL	05/16/91 UG12

## INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS				m
Chloride	mg/L	1	59.7 🕥	762
Nitrogen, Nitrate plus Nitrite	mg/L	0.02	ND	7118191
Total Organic Carbon	mg/L	0.10	11.7	

MDL

Method Detection Limit Not detected at or above the MDL. ND

EPC Wells G&H

PACE Project Number: 810516511

PACE Sample Number: Date Collected:			95 0035800 05/15/91
Date Received: Parameter	Units	MDL	05/16/91 UC112
<u>raiametei</u>	01116	MUL	00114

## INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Chloride mg/L 10 Nitrogen, Nitrate plus Nitrite Total Organic Carbon ND 25 mg/L 0.02

mg/L

0.10

MDL Method Detection Limit

Wells G&H

PACE Project Number: 810517502

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	95 0036343 05/16/91 05/17/91 MDL S 8 2
INORGANIC ANALYSIS		21
INDIVIDUAL PARAMETERS Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon	mg/L mg/L mg/L	1 52 J por 7/18/9/ 0.02 1.7 0.10 20.5 J

MDL Method Detection Limit

Wells G&H	PACE Project Number:	810517502
-----------	----------------------	-----------

PACE Sample Number: Date Collected:			95 0036351 05/16/91
Date Received: Parameter	<u>Units</u>	MDL	05/17/91 S 8 1S

## INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chloride	mg/L	1	25.6 J	700 7118191
Nitrogen, Nitrate plus Nitrite	mg/L	0.02	1.5	1 4/10
Total Organic Carbon	mg/L	0.10	16 5	

MDL Method Detection Limit

Wells G&H

PACE Project Number: 810517502

 PACE Sample Number:
 95 0036360

 Date Collected:
 05/16/91

 Date Received:
 05/17/91

 Parameter
 Units
 MDL
 UC18

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Chloride mg/L 10 654  $\sqrt{3.1}$  First mg/L 0.2 3.1 Total Organic Carbon mg/L 0.10 4.0  $\sqrt{3.1}$ 

MDL Method Detection Limit

	-	
Wel	10	G&H
ncı	13	CICKLI

PACE Project Number: 810517502

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 00364 05/16/91 05/17/91 UC22	24 —	
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon	mg/L mg/L mg/L	10 0.2 0.10	256 J 3.2 1.0 J	pon	7/18/91

MDL

Method Detection Limit Not detected at or above the MDL. ND

Wells G&H

PACE Project Number: 810517502

 PACE Sample Number:
 95 0036432

 Date Collected:
 05/16/91

 Date Received:
 05/17/91

 Parameter
 Units
 MDL
 FDUC18

## **INORGANIC ANALYSIS**

INDIVIDUAL PARAMETERS Chloride mg/L 10 652 J pm 7|18|9| Nitrogen, Nitrate plus Nitrite mg/L 0.2 2.9 Total Organic Carbon mg/L 0.10 2.0 J

MDL Method Detection Limit



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/3/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Tetrachloroethene was the only target compound list (TCL) compound detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with moficiations by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Case Narrative

Six groundwater samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 3, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S4-4	3157	05/03/91
S1-6	3162	05/03/91
S1-6Dup	3164	05/03/91
S1-6TB	3165	05/03/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

Since S4-4 was analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated. All other analyses were performed within the 7-day holding time.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met.

#### B. Continuing

Continuing calibration criteria were met with the exception of the % difference for 2-butanone (31.1) and vinyl acetate (27.1) on May 8, 1991 and 2-butanone (49.1) on May 13, 1991. The data were not affected.

## IV. Blanks

Methylene chloride was detected in the trip blank (S1-6TB) at 6 ppb and in the three method blanks at 9 ppb, 4 ppb, and 2 ppb. All methylene chloride results were qualified as less than the reported values.

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.



#### VII. Field Duplicates

Tetrachloroethene was detected in the sample at 1100 ppb, the field duplicate at 1300 ppb, in the MS at 1100 ppb, and in the MSD at 1000 ppb (RSD 11). The data are acceptable.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

Target compounds were properly identified.

## X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data. Acetone (39 ppb) was rejected from S1-6 Dup since it was not duplicated in the sample, MS, or MSD. Chloroform (30 ppb) and toluene (45 ppb) were rejected from S1-6 since they were not duplicated in the field duplicate, MS, or MSD.

#### XI. Tentatively Identified Compounds

No TICs were detected.

#### XII. System Performance

System performance requires attention. Manual integrations should be addressed. One sample exceeded holding time.

#### XIII. Overall Assessment of Data for a Case

Aromatic compounds in Sample S4-4 were qualified as estimates.

Methylene chloride results were qualified as less than the reported values.

Acetone was rejected in Sample S1-6DUP.

Chloroform and toluene were rejected in Sample S1-6.

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00022\_:

Contract:

ab Name: PACE

1atrix: (soil/water) WATER

Lab Sample ID: 3157.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2573

Level: (low/med) LOW

Date Received: 5/ 4/91

Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) PACk

Dilution Factor: 5.00

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) UG/L	(

74-87-3Chloromethane	
74-83-9Bromomethane	
75-01-4Vinyl Chloride	
75-00-3Chloroethane	
75-09-2Methylene Chloride	-
67-64-1Acetone	
75-15-0Carbon Disulfide	
75-15-0Carbon Disulfide	
75-34-31,1-Dichloroethane	
540-59-01,2-Dichloroethene (total)   25.   167-66-3Chloroform   25.   107-06-21,2-Dichloroethane   25.   107-06-21,2-Dichloroethane   25.   107-55-61,1,1-Trichloroethane   25.   107-55-6Carbon Tetrachloride   25.   108-05-4Vinyl Acetate   50.   108-05-4Bromodichloromethane   25.   1075-27-4Bromodichloromethane   25.   10061-01-5	, ;
540-59-01,2-Dichloroethene (total)   25.   167-66-3Chloroform   25.   107-06-21,2-Dichloroethane   25.   107-06-21,2-Dichloroethane   25.   107-55-61,1,1-Trichloroethane   25.   107-55-6Carbon Tetrachloride   25.   108-05-4Vinyl Acetate   50.   108-05-4Bromodichloromethane   25.   1075-27-4Bromodichloromethane   25.   10061-01-5	) ;
107-06-21,2-Dichloroethane	;
107-06-21,2-Dichloroethane	-
71-55-61,1,1-Trichloroethane	
71-55-61,1,1-Trichloroethane	
56-23-5Carbon Tetrachloride	
75-27-4Bromodichloromethane	
75-27-4Bromodichloromethane	
(10061-01-5cis-1,3-Dichloropropene       25. (U         79-01-6Trichloroethene       25. (U         124-48-1Dibromochloromethane       25. (U         79-00-51,1,2-Trichloroethane       25. (U         71-43-2Benzene       25. (U         10061-02-6Trans-1,3-Dichloropropene       25. (U	
79-01-6Trichloroethene	
124-48-1Dibromochloromethane	
79-00-51,1,2-Trichloroethane	-
71-43-2Benzene	
10061-02-6Trans-1,3-Dichloropropene	-
10061-02-6Trans-1,3-Dichloropropene	1 1
75-25-2Bromoform  25.  U	:
108-10-14-Methyl-2-Pentanone  50. (U	
591-78-6	1
127-18-4Tetrachloroethene  440.	;
: 79-34-51,1,2,2-Tetrachloroethane: 25. :U	
108-88-3Toluene 25. (U	
1 108-90-7Chlorobenzene 25.  U	
100-41-4Ethylbenzene 25.  U	_
100-42-5Styrene 25.  U	7
1330-20-7Xylene (total)  25.  U	7 :
·	

#### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Contract: . Lab Name: PACE

S4-4 00023

SDG No.:

Lab Sample ID: 3157.0 fatrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2573

evel: (low/med) LOW Date Received: 5/ 4/91

Date Analyzed: 5/13/91 % Moisture: not dec.100.

Dilution Factor: 5.00 Jolumn: (pach/cap) PACk

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

,		 !		<del></del> !
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	α
======================================	=======================================	======	;=========	; =====;
! 1	 	' <b></b>		!!
2		!	 	!!
· 3				!!
				!
5				. <b></b> ;
6				::
0				
9.		' <i></i>		''
10				
11				
12			,	:
: 13				
		!	;	;
		!	!	!
		;		
		!		!
		!	!	!
			!	
20		!		
21	i		i	<u></u>
1 22	i	;		;
1 24		;		;
75	<sup>)</sup>	;	!	;
26		:		:
1 07			1	;
20				
30	1	:		;
		;		

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

: S1-6

EPA SAMPLE NO.

Lab Name: PACE

Contract:

00028----

Matrix: (soil/water) WATER

Lab Sample ID: 3162.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2513

Level: (low/med) LOW

Date Received: 5/ 4/91

% Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L d	or	ug/kg)	UG/L	Ω	
!							:
1 74-87-3	Chloromethane			;	100.	:U	;
1 74-83-9	Bromomethane			!	100.	١U	;
75-01-4	Vinyl Chloride			:	100.	ΙU	!
1 75-00-3	Chloroethane			}	100.	IU .	;
75-09-2	Methylene Chlorı	.de		}	57.	ばんは	- ;
67-64-1	Acetone	·			100.	١U	}
75-15-0	Carbon Disulfide	•			50.	١U	;
1 75-35-4	1,1-Dichloroethe	ne		;	50.	١U	;
1 75-34-3	1,1-Dichloroetha	ne		;	50.	١U	;
1 540-59-0	1,2-Dichloroethe	ne (tota	al)_	;	50.	١U	٠ ;
1 67-66-3	Chloroform			;	,2 <del>0.</del> -	12	2:
107-06-2	1.2-Dichloroetha	ne		:	50.	; U	;
1 78-93-3	2-Butanone			1	100.	١u	1
; 71 <i>-</i> 55 <i>-</i> 6	1,1,1-Trichloroe	thane		;	50.	ŀU	;
1 56-23-5	Carbon Tetrachlo	ride		;	50.	:U	;
108-05-4	Vinyl Acetate			;	100.	:U	;
: 75-27-4	Bromodichloromet	hane		- 1	50.	:U	;
78-87-5	1.2-Dichloroprop	ane			50.	١U	;
110061-01-5	c1s-1,3-Dichloro	propene		;	50.	:U	;
79-01-6	Trichloroethene			!	50.	١U	;
124-48-1	Dibromochloromet	hane		-	50.	ΙU	;
1 79-00-5	1.1,2-Trichloroe	thane		;	50.	IU	;
1 71-43-2	Benzene			;	50.	١U	;
110061-02-6	Trans-1,3-Dichlo	ropropen	e	:	50.	١U	;
1 75-25-2	Bromoform			_ :	50.	۱U	1
108-10-1	4-Methyl-2-Penta	none		_	100.	: U	- 1
: 591-78-6	2-Hexanone			<b>;</b>	100.	; U	;
12/-18-4	letrachloroethen	2		;	1100.	:	1
1 79-34-5	1,1,2,2-Tetrachl	proethan	e _	_	50.	¦U _	;
108-88-3	Toluene			;	<del>12</del> -	1 3 6	- 1
108-90-7	Chlorobenzene			_	50.	lu i	;
100-41-4	Ethylbenzene			. 1	50.	: U	:
100-42-5	Styrene			!	50.	: U	;
1330-20-7	Xylene (total)			_ <u> </u>	50.	ŀU	:
				_ '			_;

#### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

fatrix: (Soil/water) WATER Lab Sample ID: 3162.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2513

Number TICs found: 0

evel: (low/med) LOW Date Received: 5/ 4/91

% Moisture: not dec.100. Date Analyzed: 5/ 9/91

Column: (pack/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

COMPOUND NAME : EST. CONC. : Ω CAS NUMBER ; RT 1-\_\_\_\_| <sup>2</sup>·\_\_\_\_| 6.\_\_\_\_| \_\_\_\_\_ 9. 10. <u>5Al. 7...</u> 12.\_\_\_\_| 13.\_\_\_\_\_ 14.\_\_\_\_\_ 15.\_\_\_\_ 16.\_\_\_\_ | 17.\_\_\_\_\_ 19.\_\_\_\_\_ 21.\_\_\_\_\_ 23.\_\_\_\_\_ 24.\_\_\_\_\_(\_\_\_\_( 26.\_\_\_\_\_|\_\_\_| 27.\_\_\_\_| 28.\_\_\_\_\_(\_\_\_(\_\_\_\_ <sup>29</sup>.\_\_\_\_\_

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ab Name: PACE

Contract:

: S1-6DUP -0.003.7-----

SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3164.3

Cample wt/vol: 5. (g/mL) ML Lab File ID: J2516

Level: (low/med) LOW

Date Received: 5/ 4/91

Moisture: not dec.100.

Date Analyzed: 5/ 9/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L	or	ug/kg)	UG/L	Ω	
;						:	:
1 74-87-3	Chloromethane _				100.	ŀU	;
1 74-83-9	Bromomethane			;	100.	١U	;
1 75-01-4	Vinyl Chloride			;	100.	١U	;
1 75-00-3	Chloroethane			;	100.	ΙU	1
75-09-2 <del>-</del>	Methylene Chlor	.1qe		!	38.	LB3 U	
67-64-1	Acetone			;	<i>₽</i> ₹.	1/5/	<u> </u>
75-15-0	Carbon Disulfid	le		}	50.	ŀU	:
1 75-35-4	1.1-Dichloroeth	ene		1	50.	١U	1
1 75-34-3	1,1-Dichloroeth	ane		(	50.	:U	- 1
: 540-59-0	1.2-Dichloroeth	ene (tot	al)	:	50.	١U	;
1 67-66-3	Chloroform				50.	١U	;
107-06-2	1.2-Dichloroeth	ane		;	50.	١U	- 1
1 78-93-3	2-Butanone			;	100.	: U	;
71-55-6	1,1,1-Trichloro	ethane _			50.	: U	;
1 56-23-5	Carbon Tetrachl	oride		:	50.	١U	:
108-05-4	Vinyl Acetate			:	100.	:U	;
1 75-27-4	Bromodichlorome	thane		- 1	50.	١U	Ļ
1 78-87-5	1,2-Dichloropro	pane		;	50.	:U	;
:10061-01-5	cis-1.3-Dichlor	opropene		1	50.	١U	- !
79-01-6	Trichloroethene			;	50.	١U	;
124-48-1	Dibromachlarome	thane		;	50.	!U	;
1 79-00-5	1.1.2-Trichloro	ethane _		_ ;	50.	١U	;
71-43-2	Benzene			1	50.	:U	- 1
110061-02-6	Trans-1.3-Dichle	oroproper	ne	<u> </u>	50.	١u	1
1 75-25-2					50.	iυ	;
108-10-1	4-Methyl-2-Pent	anone		i	100.	ιü	;
591-78-6	2-Hexanone			<b>!</b>	100.	١U	;
127-18-4	Tetrachloroethe	ne		-	1300.	;	:
79-34-5	1.1.2.2-Tetrach	loroethar	ne	:	50.	:U	:
108-88-3	Toluene			· <b>-</b> ;	50.	١U	:
108-90-7	Chlorobenzene			_ ;	50.	:U	;
100-41-4	Ethylbenzene			-;	50.	: U	ŀ
100-42-5	Styrene			-	50.	ΙU	:
1330-20-7	Xylene (total)_			- ;	50.	IU	:
				<u>-</u> :		+	_ :

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

S1-6DUP

latrix: (soil/water) WATER Lab Sample ID: 3164.3

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2516

evel: (low/med) LOW Date Received: 5/ 4/91

% Moisture: not dec.100. Date Analyzed: 5/ 9/91

Column: (pac)/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

, , , , , , , , , , , , , , , , , , ,	
CAS NUMBER : COMPOUND NAME : RT : EST. CONC. :	Ω :
, , , , , , , , , , , , , , , , , , , ,	,
1	;
3	;
4	:
5	;
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7	!
8·	<u>¦</u>
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90	!

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

: S1-6TB

EPA SAMPLE NO.

Lab Name: PACE Contract:

00045

Matrix: (Soil/water) WATER Lab Sample ID: 3165.1

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2496

Level: (low/med) LOW Date Received: 5/ 4/91

% Moisture: not dec.100. Date Analyzed: 5/ 8/91

Column: (pac)/cap) PACk Dilution Factor: 1.00

					ATION U			_
	CAS NO.	COMPOUND	(ug/L	or	ug/kg)	UG/L		O
;								;
1	74-87-3	-Chloromethane			:	10.	١U	:
1	74-83-9	-Bromomethane			1	10.	١U	- 1
;	75-01-4	-Vinyl Chloride			1	10.	١U	:
}	75-00-3	-Chloroethane			;	10.	ŀυ	;
;	75-09-2	-Methylene Chlorid	le		;	6.	j.Er (	L :
;	67-64-1	-Acetone -Carbon Disulfide_			;	10.	١U	:
ł	75-15-0	-Carbon Disulfide_			;	5.	; U	+
- 1	75-35-4	-1.1-Dichloroethen	e		:	5.	١U	;
;	75-34-3	-1,1-Dichloroethan	e			5.	١U	;
ļ	540-59-0	-1,2-Dichloroethen	e (tot	al)	;	5.	١U	1
;	67-66-3	-Chloroform			;	5.	١U	<b>;</b>
1	107-06-2	-1.2-Dichloroethan	e		;	5.	١U	1
1	78-93-3	-2-Butanone				10.	١U	1
:	71-55-6	-1,1,1-Trichloroet	hane		;	5.	١U	;
;	56-23-5	-Carbon Tetrachlor	ıde		<sub>:</sub>	5.	١U	;
;	108-05-4	-Vinyl Acetate			;	10.	١U	;
1	75-27-4	-Bromodichlorometh	ane		:	5.	١U	1
;	78-87-5	-1.2-Dichloropropa	ne		;	5.	١U	1
11	0061-01-5	-cis-1.3-Dichlorop	ropene		;	5.	١U	;
;	79-01-6	Trichloroethene 💆			;	5.	١U	:
:	124-48-1	Dibromochlorometh	ane		:	5.	١U	:
;	79-00-5	1,1,2-Trichloroet	hane		!	5.	ŀU	;
1	71-43-2	Benzene			;	5.	١U	:
11	0061-02-6	Trans-1.3-Dichlore	oproper	ne .	;	5.	ΙU	:
1	75-25-2	Bromoform			;	5.	មេ	1
1	108-10-1	4-Methvl-2-Pentan	one		:	10.	;U	:
1	591-78-6	2-Hexanone			:	10.	ŧυ	:
!	127-18-4	Tetrachloroethene			;	5.	١U	†
;	79-34-5	1.1.2.2-Tetrachlos	roethar	ne	;	5.	١U	:
!	108-88-3	Toluene			:	5.	١U	1
;	108-90-7	Chlorobenzene			<b>;</b>	5.	١U	;
;	100-41-4	Ethylbenzene	<b></b> _		;	5.	:U	;
1	100-42-5	Styrene				5.	١U	;
!	1330-20-7	Xylene (total)			<b>:</b>	5.	١U	1
!					!		. :	:

### YULATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

S1-6TB

atrix: (soil/water) WATER Lab Sample ID: 3165.1

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2496

evel: (low/med) LOW Date Received: 5/ 4/91

% Moisture: not dec.100. Date Analyzed: 5/ 8/91

Lolumn: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME		: EST. CONC.	
1				
2				!;
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30				
		!	!	!

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DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/3/91

Chemical Analyses Performed By PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383~7233



#### EXECUTIVE SUMMARY

All postive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

The chain of custody forms for this sample delivery group do not provide a date of sampling, nor do they indicate the method of transfer of samples between the sampler and laboratory. It was assumed, based on other project documentation, that these samples were collected on May 3, 1991.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

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Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Seven treatment system samples were collected and submitted to PACE, Inc. on May 3, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Lab ID</u>	Date of Collection
3156	05/03/91
3158	05/03/91
3159	05/03/91
3160	05/03/91
3161	05/03/91
3163	05/03/91
3167	05/03/91
	3156 3158 3159 3160 3161 3163



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



# I. Holding Times

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for volatile aqueous samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/11/91 and 5/16/91.

### B. Continuing

Continuing calibration criteria were met on 5/15/91 with the exception of the % difference for trans-1,3-dichloropropene (actual 45.7; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/17/91.

### IV. Blanks

Methylene chloride was reported in the trip blank at 2.0 ug/L. As discussed in Section X, this concentration was below the MDL determined through the PQL study for this project and should not have been reported. Methylene chloride was changed to "ND" on the results form for Sample S6-6TB.

Method blanks and the field blank were clean.



### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

The laboratory did not perform a matrix spike or matrix spike duplicate for this sample delivery group.

### VII. Field Duplicates

Samples S6-6 and S6-6DUP were submitted as duplicate samples. No compounds were detected in either sample.

### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

### IX. TCL Compound Identification

TCL compound identifications were acceptable.

### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45



Compound	MDL (ug/L)
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for trichloroethene in Sample S2-4 was quantified incorrectly. The correct result was 0.70 ug/L.

The result reported for tetrachloroethene (110 ug/L) in Sample S3-4 was well beyond the calibration range of the instrument (25 ug/L). This result was qualified as estimated. Sample S3-4 should not have been submitted for Method 524.2 analyses.

All other results and detection limits were acceptable with regard to the supporting data.

### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

# XII. System Performance

System performance was acceptable.

### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Method detection limits were corrected where necessary. The result for trichloroethene in Sample S2-4 was corrected to 0.70 ug/L.

			000
Unifirst P.	ACE Project Numbe	r: 81050450	0
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	05/0	031589 13/91 14/91
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIE Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	D ug/L ug/L ug/L ug/L ug/L ug/L	0.5 ND U 0.5 ND 0.5 ND 0.5 ND 0.5 ND 0.5 ND	J Elus Hulin
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 ND 0.5 ND 0.5 ND 0.5 4.9 0.5 ND 4	j
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L	0.5 ND 0.5 ND 0.5 ND 0.5 ND 0.5 ND 0.5 ND	
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 ND 0.5 ND 0.5 ND 0.5 ND 0.5 ND 0.5 ND	

ug/L ug/L ND

ND \_

0.5

MDL Method Detection Limit
ND Not detected at or above the MDL.

Ethyl benzene Xylene, total

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PACE Project Number: 81050**(55)00) 2 1** 

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 00: 05/03: 05/04: <u>S3-4</u>	/91	-	
ORGANIC ANALYSIS		:				
VOLATILE ORGANICS BY 524.2 MODIFIED			,	۸ ۱		
Vinyl chloride	ug/L	0.5	ND un	EXA WI	1	
Chloroethane	ug/L	0.5	ND /	1/4 ("		
Methylene chloride -	ug/L	0.5	ND	• (		
1,1-Dichloroethene	ug/l		ND -/ ₁		- •	
1,1-Dichloroethane	ug/L	0.5	ND			
trans-1,2-Dichloroethene	ug/L	0.5				
cis-1,2-Dichloroethene	uq/L	0.5	ND			
Chloroform	- ug/L	<del>0.5</del>	ND			
1,2-Dichloroethane	ug/L ·	$\frac{0.5}{0.5}$ -	ND-		-	
1,1,1-Trichloroethane	ug/L	0.5	- ND  -	_		-
Carbon tetrachloride	ug/L	0.5	DN			
Bromodichloromethane	ug/L	0.5	ND	·		
or omed refrictione that						
1,2-Dichlo <del>ropropane</del>	- uq/L	0.5	- ND-   -			
cis-1,3-Dichloropropene	ug/L	0.5	ND			
Trichloroethene	ug/L	- 0.5	ND			
Dibromochloromethane	ug/L	0.5	ND			
,1,2-Trichloroethane	ug/L	0.5	ND -			
Benzene	ug/L	0.5	ND			
e la la responsación de la la la la la la la la la la la la la	.u., ##	· ·-				
trans-1,3-Dichforopropene	ug/L	0.5	ND \			
	- ug/L			• •		
	ug/L			-		
,1,2,2-Tetrachloroethane	ug/L					
					-	
Chlorobenzene	- ug/L	0.5	ן שא	•		
thyl benzene	. ug/L	Λ Ε	ND	<del>-</del>		
Kylene, total						
	- uy+L		-110			
The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s			 			
IDL Method Detection Limit			<b></b> -	-		
D Not detected at or above the I			-	_		

PACE Project Number: 810504500

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0031597 05/03/91 05/04/91 <u>\$6-6</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W EXPORT
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

Method Detection Limit MDL Not detected at or above the MDL. ND

PACE Project Number: 810504500

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0031600 05/03/91 05/04/91 S6-6 Dup
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US EXA ND 1/6/31 ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

° 00039
PACE Project Number: 810504500

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0031619 05/03/91 05/04/91 S6-6 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US EFS ND 1/6/91 ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethyl benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Xylene, total	ug/L	0.5	ND —

Method Detection Limit MDL Not detected at or above the MDL. ND

PACE Project Number: 810504500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031635 05/03/91 05/04/91 <u>S1-6 FB</u>
ORGANIC ANALYSIS	•		
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WELL AND TO STANKE
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND I

MDL Method Detection Limit ND Not detected at or above the MDL.

	Unifirst	PACE Project Number	er: 810	504500
	PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0031678 05/03/91 05/04/91 52-4
	ORGANIC ANALYSIS			
	VOLATILE ORGANICS BY 524.2 MODIF Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	IED ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N
	cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
	1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND
-	trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND IND IND IND IND IND IND IND IND IND I
-	Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND
ke-	MDL Method Detection Limit ND Not detected at or abov	e the MDL.		



# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/4/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

All postive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

A large (41 seconds) shift in retention times occurred after analysis of the first sample (S3-5) of this sample delivery group. No compounds were detected in this sample and no extraneous peaks were observed in the sample chromatogram. No qualification of data was made based on this shift. This shift should have been noted in the case narrative for this data package.

The case narrative reported that foaming occurred during analysis of all samples except the trip blank and the field blank.

Cooler temperature upon receipt of samples by the laboratory was  $10^{\circ}$ C. Temperatures outside the  $4^{\circ}$ C  $\pm 2^{\circ}$ C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.



These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Six treatment system samples were collected and submitted to PACE, Inc. on May 4, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-7FB	3171	05/04/91
S2-5	3173	05/04/91
S3-5	3174	05/04/91
S6-7	3176	05/04/91
S6-7DUP	3177	05/04/91
S6-7TB	3178	05/04/91



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/16/91.

#### B. Continuing

Continuing calibration criteria were met on 5/17/91 (08:15) and 5/17/91 (20:43).

#### IV. Blanks

The trip blank, field blank, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-7. The percent recoveries for 1,1-dichloroethene were below QC criteria in the MS and the MSD. The



percent recovery for benzene was below QC criteria in the MSD. No positive results for these compounds were reported, so no data were qualified.

### VII. Field Duplicates

Samples S6-7 and S6-7DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas were acceptable. A large (41 seconds) shift in retention times occurred after analysis of the first sample (S3-5) in this sample delivery group. No compounds were detected in Sample S3-5 and no extraneous peaks were observed in the sample chromatogram. Data were not qualified.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride Chloroethane	0.48 0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45



Compound	$\underline{MDL}$ ( $\underline{ug}/L$ )
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for trichloroethene in Sample S2-5 was quantified incorrectly. The correct result was 1.1 ug/L.

The result reported for tetrachloroethene in Sample 2-5 (27 ug/L) was slightly beyond the calibration range of the instrument (25 ug/L). This result met precision and accuracy criteria and was accepted unqualified.

All other results and detection limits were acceptable with regard to the supporting data.

### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

### XII. System Performance

System performance was acceptable with the exception of the shift of retention times.

### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

The result for trichloroethene in Sample S2-5 was corrected to 1.1 ug/L.

PACE Project Number: 810504501

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0031716 05/04/91 05/04/91 <u>S1-7 FB</u>
ORGANIC ANALYSIS			(91
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND as ft slake
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

Unifirst PACE Project Number: 810504501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031732 05/04/91 05/04/91 <u>\$2-5</u>
ORGANIC ANALYSIS			, 1 <u>a</u> 1
VOLATILE ORGANICS BY 524.2 MODI Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W LXD 1/u/91 ND ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND 27 J ND U-S ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810504501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0031740 05/04/91 05/04/91 S3-5
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W LAWAI
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

Unifirst	PACE Project Number:	810504501
011111136	Thee I to jeet number.	010304301

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031767 05/04/91 05/04/91 S6-7
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene cis-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND is is the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall of the fall
Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane 1,2-Dichloropropane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene trans-1,3-Dichloropropene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethyl benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Xylene, total	ug/L	0.5	ND _

MDL

Method Detection Limit Not detected at or above the MDL. ND

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PACE Project Number: 810504501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0031775 05/04/91 05/04/91 S6-7 Dup
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND LANGER
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

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PACE Project Number: 810504501

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL_	95 0031783 05/04/91 05/04/91 <u>S6-7 TB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 M Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	UDIFIED ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W KANGAI
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit
ND Not detected at or above the MDL.



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G & H PROJECT

TREATMENT SYSTEMS SAMPLING

VOLATILES ANALYSIS DATA

Samples Collected 5/4/91

Chemical Analyses Performed By:
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Detection limits for aromatic compounds were estimated in Samples S1-7, S1-7Dup, S1-7TB, and S4-5. Detection limits for 2-butanone were estimated in samples S1-7 and S1-7Dup; detection limits for trans-1,3-dichloropropene were estimated in all four samples.

Acetone levels detected below the quantitation limit (CRQL) in Samples S1-7Dup and S4-5 were adjusted to "none detected" at the CRQL, based on associated blank contamination.

Collection times recorded on the Chain of Custody are different for Samples S1-7, S1-7Dup, S1-7MS, and S1-7MSD; these samples are not, therefore, true duplicate samples. Other problems identified on the Chain of Custody records include: (1) corrections to entries on the forms are made incorrectly, and do not include initials and date; (2) the last (third) set of transfer signatures does not indicate the affiliation of the individuals involved; (3) no preservation, including cold storage of the samples, is documented; and (4) separate entries should not be made on the custody record for MS/MSD samples.

Validation of organic data is conducted in conformance with U.S. Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses (February 1, 1988), with modifications by EPA Region I (November 1, 1988).

Based on the supporting documentation, qualifier codes as reported by the laboratory may be added, deleted, or modified by the data validator. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the referenced Functional Guidelines:

- U The material was analyzed for, but not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.



These codes are used on the accompanying Form I's (copied from the data package) to qualify some of the results as appropriate based on the data review.



### Case Narrative

Six treatment system samples (including separate samples for matrix spike and matrix spike duplicate analysis) were collected on May 4, 1991, and submitted to PACE, Inc. on the same date. The laboratory was requested to perform volatile organics analysis (VOA); the EPA Contract Laboratory Program (CLP) Statement of Work dated 2/88 was followed.

The following samples are included in this Sample Delivery Group:

Client ID	<u>Lab ID</u>	Collection Date
S1 <b>-</b> 7	3168	05/04/91
S1-7Dup	3169	05/04/91
S1-7TB	3170	05/04/91
S4-5	3175	05/04/91

Volatiles analysis results for these samples were reported by the laboratory under Project Number 810504.501.



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

Samples S1-7, S1-7Dup, S1-7TB, and S4-5 were analyzed beyond the 7-day holding time for samples that are not preserved with hydrochloric acid (HCl) in the field, but were all analyzed within 14 days of collection. Detection limits for all aromatic compounds (benzene, toluene, ethylbenzene, chlorobenzene, styrene, and xylenes) in these samples are qualified as estimated "UJ"; no positive results were reported for any of the aromatic comounds.

The chain of custody records do not indicate that the samples were stored at 4°C (or in any form of cold storage) from the time of collection until arrival at the laboratory. Cold storage is a form of preservation, and is especially important for samples intended for volatiles analysis. No qualifiers are applied on this basis due to same-day laboratory delivery and documentation of proper storage conditions at the laboratory contained in the Case Narrative to the data package.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

The samples were analyzed under a single initial calibration, performed on 4/24/91. All criteria were met in this calibration.

### B. Continuing

Sample analyses were performed on instrument  ${\tt J}$ , on 2 separate analysis dates.

Continuing calibration criteria were met on 5/12/91 with the exception of the Percent Difference (%D) for 2-butanone (actual 26, criterion 25). In addition, the Response Factor (RF) reported for trans-1,3-dichloropropene is incorrect. A value of 0.287 is hand-



written on Form VII; the correct value (based on the manual area found on the quantitation report) is 0.224. The %D for trans-1,3-dichloropropene (actual 42, criterion 25) was also incorrectly reported, as 25. Detection limits for trans-1,3-dichloropropene in S1-7TB and S4-5 are qualified as estimated, "UJ". No other data are affected.

Continuing calibration criteria were met on 5/13/91 with the exception of the %D for 2-butanone (actual 49, criterion 25) and trans-1,3-dichloropropene (actual 52, criterion 25). Detection limits for both compounds in S1-7 and S1-7Dup are qualified as estimated, "UJ". The reported RF for trans-1,3-dichloropropene is again incorrect (0.184 actual, 0.236 reported). The %D referred to above is based on the correctly calculated RF. No data are affected by this error.

### IV. Blanks

Acetone was reported at 2 ug/L in VBLK02; no target compounds or extraneous peaks were detected in VBLK01 or the trip blank. Acetone results in S1-7Dup and S4-5 were qualified as less than the dilution-adjusted CRQL.

### V. Surrogate Recovery

Recovery of toluene-d8 in S1-7MSD was slightly high at 113% (QC limits 88-110%). This is probably due to the unusually low area obtained for internal standard (IS) #3, used to calculate the toluene results. The area for IS#3 was within acceptance limits, but only 10% higher than the minimum acceptable area. No data are affected.

### VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample S1-7. All Percent Recovery (%R) and Relative Percent Difference (RPD) results were within acceptance criteria.

### VII. Field Duplicates

According to the chain of custody record, Samples S1-7 and S1-7Dup were collected at different times; by definition, therefore, they are not true duplicate samples.



Tetrachloroethene (PCE) was the only target compound reported for S1-7 and S1-7Dup, at 1600 ppb and 1300 ppb, respectively. Agreement between these values is good, with an RPD of 24%.

### VIII. Internal Standards Performance

Internal standard areas and retention times were within acceptable limits for all sample and QC analyses in this sample delivery group. All three IS areas in S1-7MSD were unusually low, though still within the QC limits; this could be the result of a poor injection of the IS solution at the time of analysis. Data are not affected.

### IX. TCL Compound Identification

TCL compound identifications were acceptable and properly documented in all samples.

### X. Compound Quantitation and Reported Detection Limits

Samples S1-7, S1-7Dup, and S4-5 were analyzed as dilutions to achieve PCE results within the linear range of the instrument; no undiluted runs of these samples were reported or performed, per conversation with C. Corkey of PACE, Inc. The PCE concentrations reported in the diluted analyses were acceptable.

Contract Required Quantitation Limits (CRQL's) were appropriately adjusted to reflect the dilutions performed for each sample. No other positive results were reported.

### XI. Tentatively Identified Compounds

No tentatively identified compounds (TIC's) were observed or reported in these samples.

### XII. System Performance

System performance was satisfactory throughout the analysis of these samples, with the exception of the missed holding times.

### XIII. Overall Assessment

The sample results are usable as reported with the following qualifications and modifications:



Detection limits for the aromatic compounds and for trans-1,3-dichloropropene were estimated in all four samples.

Detection limits for 2-butanone were estimated in S1-7 and S1-7Dup.

Acetone results in S1-7Dup and S4-5 were qualified as less than the dilution-adjusted CRQL.

Incomplete, unclear, or inaccurate Chain of Custody records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the custody records in this data package:

- 1. Corrections are made as "write-overs" and do not include initials of the person who made them or the date they were made.
- 2. The third set of signatures does not include the affiliations of the parties involved.
  - 3. No preservation is recorded, including cold storage.
  - 4. Analyses being requested are vague, i.e. "CLP" only.
- 5. MS/MSD analyses are a <u>laboratory-initiated</u> quality control activity; there should not, therefore, be separate samples on the chain of custody identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.

# VOL TILE ORGANICS ANALYSIS DATA SHEET

S1-7

EPA SAMPLE NO.

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3168.6

Sample wt/vol: 0.4 5. (g/mL) ML Lab File ID: J2574

CaE 6/28/91

Level: (low/med) LOW Date Received: 5/ 4/91

% Moisture: not dec.100. Date Analyzed: 5/12/91

Column: (pack/cap) PACk Dilution Factor: 12.50

		CONCENTRA	IU NOITA	VITS:		
CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/L	Ω	
,						<b>-</b> ,
i - 7.1-07-2	Cblawseethame		i	120.	; ; U	i
1 71-07-0	Chloromethane Bromomethane		;	120.	; U	•
74-03-3	Vinyl Chloride		;	120.		1
75-01-4	Vinyi Chidride		;	120.	: U	i
75-00-3	Chloroethane Methylene Chlori		;	62.	10	j t
1 67-61-1	Asatane Chieri	.oe		120.	! U	i
75-15-0	Acetone Carbon Disulfide		¦	62.	: U : U	•
75-15-0	carbon Disultibe	·	;	62.	-	i
1 75-33-4	1,1-Dichloroethe	.ue	:		۱ U	i
75-34-3	1,1-Dichloroetha	ne	<del></del>	62. 62.	! U	į
1 240-23-0	1,2-Dichloroethe	ene (total	'!		! U	i
1 6/-66-3	Chloroform		!	62.	; U	i
107-06-2	1,2-Dichloroetha	ine	!	62.		- <u>!</u>
1 /8-93-3	2-Butanone		!	120.	•	' i
; /1-55-6	1,1,1-Trichloroe	thane	!	62.	10	i
: 56-23-5	Carbon Tetrachlo	rıde	!	62.	! U	
108-05-4	Vinyl Acetate		!	120.	:U	
1 75-27-4	Bromodichloromet	hane	;	62.	: U	i
1 78-87-5	1,2-Dichloroprop	ane	;	62.	: U	1004
110061-01-5	cis-1,3-Dichloro	propene	:	62.	: U	102/1/01
1 79-01-6	Trichloroethene			62.	! U	:
124-48-1	Dibromochloromet	hane	;	62.	١U	1
1 79-00-5	1,1,2-Trichloroe	thane	!	62.	: U	_!
71-43-2	Benzene Trans-1,3-Dichlo		;	62.	IN U	
10061-02-6	Trans-1,3-Dichlo	ropropese	;	62.	14 US	<b>[</b> 1
: 75-25-2	Bromoform		;	62.	:U	1
108-10-1	4-Methyl-2-Penta	none	!	120.	l U	;
: 591-78-6	2-Hexanone		!	120.	:U	t I
1 27-18-4	Tetrachloroethen	e	;	1600.	;	:
: 79-34 <b>-</b> 5	1,1,2,2-Tetrachl	oroethane	:	62.	:U	1
108-88-3	Toluene			62.	IN UJ	1 cas 21/91
108-90-7	Chlorobenzene			62.	IN UJ	
100-41-4	Ethylbenzene		;	62.	IN UJ	1
100-42-5	Styrene		;	62.	IN UJ	
1330-20-7	Xylene (total)		;	62.	MUJ	
	,		;			:
						-

# VOI TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
| S1-7DUP | |

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3169.4

Sample wt/vol: 0.4 8. (g/mL) ML Lab File ID: J2577

CaE 6/28/91

Level: (low/med) LOW 777777 Date Received: 5/ 4/91

% Moisture: not dec.100. Date Analyzed: 5/13/91

Column: (pack/cap) PACK Dilution Factor: 12.50

		CONCENTRATION	N UNITS:		
CAS NO.	COMPOUND	(ug/L or ug/	kg) UG/L	Ω	
				· <del></del>	
·	<b></b>	;			:
74-87-3	Chloromethane		120.	! U	;
1 74-83-9	Bromomethane		120.	١U	1
75-01-4	Vinyl Chloride_		120.	; U	1
1 75-00-3	Chloroethane		120.	: U	1
1 75-09-2	Methylene Chlor:	ide	62.	: U	1
1 67-64-1	Acetone	}	120. top_	izes u	
75-15-0	Carbon Disulfide	≘ ;	62.	l U	: 4/28/91
1 75-35-4	1,1-Dichloroethe	ene	€2.	: U	:
1 75-34-3	1.1-Dichloroetha	ane	62.	: U	!
1 540-59-0	1,2-Dichloroethe	ene (total);	62.	! { J	!
1 67-66-3	Chloroform	:	62.	:U	!
107-06-2	1.2-Dichloroetha	ane :	62.	: U	1
1 78-93-3	2-Butanone	:	120.	:W UJ	1000101
1 71-55-6	1,1,1-Trichloroe	thane	62.	rົບ	3hly
: 56-20-5	Carbon Tetrachlo	oride	62.	: U	;
108-05-4	Vinyl Acetate		120.	:U	1
75-27-4	Bromodichloromet	hane !	62.	ŀυ	:
: 78-87-5	1,2-Dichloroprop	nane :	62.	¦U	;
110061-01-5	cis-1,3-Dichloro	propene :	62.	ŀU	;
1 79-01-6	Trichloroethene	1	62.2S.	: 320	المحادة
124-48-1	Dibromochloromet	hane	62.	:U	١٥١صها٥١
1 79-00-5	1,1,2-Trichlorde	thane	62.	10	
1 71-43-2	Benzene	}	62.	IN UJ	1
110061-02-6	Benzene Trans-1,3-Dichlo	ropropene :	62.	IN UJ	1
1 75-25-2			62.	ŧΰ	1
108-10-1	4-Methyl-2-Penta	inone	120.	: U	
: 591-78-6	2-Hexanone		120.	١U	is all
127-18-4	Tetrachloroethen	ie :	1300.	;	: \$V`^`
: 79-34-5	1,1,2,D-Tetrachl	oroethane :	62.	: U	$c_{n}$
108-88-3	Toluene		62.	IN UJ	;
108-90-7	Chlorobenzene	;	62.	: W UJ	:
100-41-4	Ethylbenzene	†	62.	LN AL	
100-42-5	Styrene		62.	IN UJ	
1 1330-20-7	Xylene (total)		62.	W UJ	
1	,		·	;	
					•

# VO! TILE ORGANICS ANALYSIS DATA SHEET

S1-7TB

EPA SAMPLE NO.

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3170.8

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2555

Level: (low/med) LOW Date Received: 5/ 4/91

% Moisture: not dec.100. Date Analyzed: 5/13/91

Column: (pac)/cap) PACk Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(uq/L or	. mā/kā)			ם
1			:			;
1 74-87-3	Chloromethane		1	10.	! 🖰	:
1 74-83-9	Bromomethane		!	10.	ΙIJ	ŀ
1 75-01-4	Vinyl Chloride			10.	:U	1
1 75-00-3	Chloroethane		:	10.	; LJ	;
: 75-09-2	Methylene Chlori	de	:	5.	: U	1
: 67-64-1	Acetone		;	10.	ŧυ	1
; /5-15-0	Carbon Disultide	·	i	5.	١U	!
1 75-35-4	1,1-Dichloroethe	ne	1	5.	: U	1
1 75-34-3	1,1-Dichloroetha	ne		5.	ΙU	:
1 540-59-0	1,2-Dichloroethe	ne (total	) ;	5.	١U	1
1 67-66-3	Chloroform		!	5.	ΙU	;
1 107-06-2	1,2-Dichloroetha	ne	;	5.	١U	;
1 78-93-3	2-Butanone			10.	ŧU	}
1 71-55-6	·1,1,1-Trichloroe	thane		5.	١IJ	;
: 56-23-5	Carbon Tetrachlo	ride	;	5.	١U	!
108-05-4	Vinyl Acetate		;	10.	ŀÜ	;
1 75-27-4	Bromodichloromet	hane	;	5.	١U	;
1 78-87-5	1,2-Dichloroprop	ane	;	, 5 <b>.</b>	;U	;
110061-01-5	cis-1,3-Dichloro	propene _	;	5.	١U	;
1 79-01-6	Trichloroethene		;	5.	HJ	1
124-48-1	Dibromochloromet	hane	;	5.	١U	1
1 79-00-5	1,1,2-Trichloroe	thane	;	5.	:U	_
1 71-43-2			;	5.	<i>ا</i> کر:	Ú;
110061-02-6	Trans-1,3-Dichlo	ropropene	;	5.	-iβα′ l	(グ :
	Bromoform		;	5.	١Ù	:
108-10-1	4-Methyl-I-Penta	none	;	10.	١U	٠. ا
: 591-78-6 <del>-</del>	2-Hexanone		;	10.	ŀυ	car: 2/1/91
1 27-18-4	Tetrachloroethen	e		5.	HJ	1,1,1
1 79-34-5	1,1,2,2-Tetrachl	orcethane	1	5.	ŀυ	, 1
108-88-3	Toluene			5.	IN DK!	
108-90-7	Chlorobenzene			5.	:12 U	J :
100-41-4	Ethylbenzene		!	5.	IN M	J:
100-42-5	Styrene		_ :	5.	I W U	J:
1330-20-7	Xylene (total)			5.	1/1/1	了:
 			!		_	;

# VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3175.9

Sample wt/vol: /. %. (g/mL) ML Lab File ID: J2563

CAÉ WARIA

tevel: (low/med) LOW Date Received: 5/ 4/91

% Moisture: not dec.100. Date Analyzed: 5/13/91

Column: (pack/cap) PACK Diglution Factor: 5.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/kg) UG/L Q

1		;	<b>!</b>
74-87-3Chloromethane	50.	; U	
74-83-9Bromomethane	50.	; U	1
75-01-4Vinyl Chloride	50.	(U	{
75-00-3Chloroethane	50.	¦ U	i
75-09-2Methylene Chloride	25.	lu i	CAE
67-64-1Acetone	50.	1 2 U	6/28/91
75-15-0Carbon Disulfide	25.	l U	1 -10-61 41
75-35-41,1-Dichloroethene	25.	:U :	
75-34-31.1-Dichloroethane	25.	10	
<pre>1 540-59-01,2-Dichloroethene (total);</pre>		10 :	
67-66-3Chloroform	25.	:U :	
107-06-21,2-Dichloroethane	25.	10 1	
78-93-3	50.	:U :	
; 71-55-61,1,1-Trichloroethane;	25.	: U:	
<pre>56-23-5Carbon Tetrachloride;</pre>	25.	:U :	
108-05-4Vinyl Acetate	50.	:U :	
: 75-27-4~Bromodichloromethane:	25.	:ប :	
: 78-87-51,2-Dichloropropane	25.	۱U :	
110061-01-5cis-1,3-D:chloropropene	25.	.ប :	
79-01-6Trichloroethene	25.	: : :	
124-48-1Dibromochloromethane	25.	IU :	
: 79-00-51,1,2-Trichloroethane	25.	-1U,1	
1 71-43-2Benzene:	25.	12 UJ 1	
:10061-02-6Trans-1,3-Dichloropropene:	25.	: IN 14:	
1 75-25-2Bromoform	25.	!U !	
108-10-14-Methyl-2-Pentanone	50.	10 1	<b>.</b>
591-78-62-Hexanone	50.	ાં ૯ભ	الماران
127-18-4Tetrachloroethene	590.	1 !	411191
: 79-34-51,1,2,2-Tetrachloroethane:	25.	:ប :	
: 108-88-3Toluene	25.	145 1	
: 108-90-7Chlorobenzene	25.	1년 :	
1 100-41-4Ethylbenzene	25.	ाम्य ।	
100-42-5Styrene	. 25.	H	
: 1330-20-7Xylene (total);	25.	: <u>W</u> :	
 		_!!	



### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
INORGANIC ANALYSES DATA

Samples Collected 5/4/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### EXECUTIVE SUMMARY

Metals analytical data presented for this sample delivery group were fair. Several positive sample results were rejected due to blank contamination. All unqualified sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting Based on the supporting documentation, qualifier documentation. codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Inorganic Data Validation

for

### Environmental Project Control, Inc.

### Samples Collected 5/4/91

### Case Narrative

This group contained three treatment system samples including one field blank to be analyzed for total metals.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
S1-7	3168	5/04/91
S1-7FB	3171	5/04/91
S6-7	3176	5/04/91

The areas reviewed during validation are listed below.



### CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
  - IV. ICP Interference Check Sample
  - V. Matrix Spike Sample Analysis
  - VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
  - XII. Overall Assessment



### Data Validation

### I. Holding Times

All metals analyses were conducted within acceptable holding times.

### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected above 20 ppb in any sample (including the matrix spike), data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within ± 20% of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for cadmium and silver were estimated.

### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

The preparation blank contained antimony (-1.4) below its negative IDL.

The field blank contained calcium (607 ppb), sodium (767 ppb), and zinc (34 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Calcium and sodium for S1-7FB and zinc results were qualified as less than the reported values.

Antimony detection limits were raised to 2.6 U because of the negative blank values.



### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

### V. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except for barium (49% recovery) and thallium (63.6% recovery). Positive results and detection limits for the above analytes were qualified as estimated (J and UJ).

### VI. Duplicate Sample Analysis

Duplicate analyses for dissolved metals were satisfactory.

### VII. Laboratory Control Sample Analyses

Laboratory control sample results were satisfactory.

### VIII. Furnace Atomic Absorption Analysis

Duplicate injections were performed for all samples and agreed within +20%.

### IX. ICP Serial Dilution Analysis

Serial dilutions were conducted on S1-7. All results met the validation criteria of 15% with the exception of zinc (16.4% D). Positive results and detection limits for zinc were qualified as estimated.

### X. Detection Limits

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

### XI. Sample Result Verification

Sample results were acceptable as qualified.



### XII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within  $\pm$  20% of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for cadmium and silver were estimated.

The preparation blank contained antimony (-1.4) below its negative IDL.

The field blank contained calcium (607 ppb), sodium (767 ppb), and zinc (34 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Calcium and sodium for S1-7FB and zinc results were affected.

Antimony detection limits were raised to 2.6 U because of the negative blank values.

Matrix spike analyses were satisfactory except for barium (49% recovery) and thallium (63.6% recovery). Positive results and detection limits for the above analytes were qualified as estimated (J and UJ).

Serial dilutions were conducted on S1-7. All results met the validation criteria of 15% with the exception of zinc (16.4% D). Positive results and detection limits for zinc were qualified as estimated.

## U.S. EPA - CLP

# INORGANIC ANALYSES DATA SHEET

EFA	SAMPLE	NO.

INORGANIC	ANALYSES	DATA	SHEET		
			0001	5	

sh Name: PAC	E INCORPORAT	ED	Contract: E	-	012	S1-7
						SDG No.: S1-7_
trix (soil/v	vater): WATE	SR .		Lab :	Sampı	e ID: 3168.6
evel (low/med	i): LOW_			Date	Rece	ived: 05/04/91
Solids:		.0		-		
Co	oncentration	Units (ug	/L or mg/kg dry	y weig	ght):	UG/L_
	CAS No.	Analyte	Concentration	c c	2	M
	7420 00 5	77111111111	105	<u></u>		<del>-</del>
	7429-90-5	Aluminum_ Antimony		\ \ <del></del>		F 2.64
	7440-36-0 7440-38-2	Arsenic	0.80_ 1.0_	—		F A.V.
	7440-38-2	Barium	16.0			! _
		Beryllium	1.1	U		P 7
	7440-43-9	Cadmium	3.0			P_ 2
	7440-70-2	Calcium	83500			P_
	7440-47-3	Chromium	9.5	0	<b>"</b>  :	P
	7440-48-4	1 —	6.4			P
	7440-50-8	Copper	5.0		[;	P_
	7439-89-6	Iron	97.7	<u>u</u>		P-
	7439-92-1	Lead		υ		P_ F_
	7439-95-4	Magnesium	10400		—— :	P_
	1	Manganese	1.5			P_
	7439-97-6	Mercury_	0.20	— ان		cv
	7440-02-0	Nickel	8.6	<u>اں</u> ا		P_
		Potassium	2460			P_
•		Selenium	0.50			F_
	I .	Silver	8.1	ט		P J
		Sodium	96800			P
		Thallium	0.70	U -		F_ \
	7440-62-2	Vanadium	4.2	ט –		P_
	7440-66-6	Zinc	146			p   W
		Cyanide_		- -		NR
						_
lor Before:	COLORLESS	Clarit	y Before: CLE	AR_	!	Texture:
lor After:	COLORLESS	Clarit	y After: CLEA	AR_	1	Artifacts:
omments:						

EPA	SAMPLE	NO.

1 EFA SAMPLE NO INORGANIC ANALYSES DATA SHEET

ah W	ame. DYC	F INCORPORAT	ED	Contract: El		U 6 S1-7FB
						SDG No.: S1-7_
Lab C	ode:	Ca	se No.:	SAS NO.	•	2DG MO.: 2T-/
atri	x (soil/	water): WATE	R		Lab Samp	le ID: 3171.6
svel.	(low/me	d): LOW_	_		Date Rec	eived: 05/04/91
s Sol	ids:		0			
<del>-</del>	С	oncentration	Units (ug,	/L or mg/kg dry	y weight)	: UG/L_
		CAS No.	Analyte	Concentration	C Q	м
		7429-90-5	Aluminum	195	<u></u> <del></del>	P
			Antimony_		<del>  </del>	F 2.64
		7440-38-2	Arsenic	1.0	ŭ	F_
		7440-39-3	Barium		ט	PJ
		i	Beryllium		ט	P_
		7440-43-9	Cadmium	3.0	ש	P_12
		7440-70-2	Calcium		<b>B</b>	P_
		7440-47-3	Chromium	9.5	ט	P P
		7440-48-4	Cobalt	6.4	ט	P_
		7440-50-8	Copper	4.5	ַ ע	P_
		7439-89-6	Iron	97.7	ט	P_ P_
		7439-92-1	Lead	0.60	ט	F
•		7439-95-4	Magnesium		ט	P_     P_
		7439-96-5	Manganese		ש	P_
		7439-97-6	Mercury	0.20	ט .	CV
		7440-02-0	Nickel	8.6	ש	P_
		7440-09-7	Potassium	760_	ש	P_ F_
		7782-49-2	Selenium_	0.50	ש	F_
		7440-22-4	Silver	8.1_	ט	P 1
		7440-23-5	Sodium	767_	B	P_
		7440-28-0	Thallium_	0.70	ט	F \
		7440-62-2	Vanadium_	4.2	ט	P
		7440-66-6	Zinc	34.0		P 5
			Cyanide_			NR
			l			_
lor	Before:	COLORLESS	Clarit	ty Before: CLEA	AR_	Texture:
lor	After:	COLORLESS	Clarit	ty After: CLE	AR_	Artifacts:
:ommer	nts:					
			1			
			<del></del>			

J.S. EPA - CLE

# INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.

00017	
	S6-7

Lab Name: PACE_INCOR	PORATED	Contract: EPC	56-7
Lab Code:	Case No.:	SAS No.:	SDG No.: S1-7
Matrix (soil/water):	WATER	. Lab Sampl	e ID: 3176.7
Level (low/med):	LOW	Date Rece	ived: 05/04/91
Solids:	0		

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

	CAS No.	Analyte	Concentration	С	Q	м	
	7429-90-5	Aluminum	195	Ū		P	į 
	7440-36-0	Antimony	0-80	U	-W-	F	12-64
	7440-38-2	Arsenic	1.0	บ		F	
	7440-39-3	Barium	19.0	B.	<del>N</del>	P	1
	7440-41-7	Beryllium	1.1	ט		P	
	7440-43-9	Cadmium	3.0	ប		P	J
	7440-70-2	Calcium	86900		E	P	]
	7440-47-3	Chromium	9.5	ប៊		P_	
	7440-48-4	Cobalt	6.4	U		P	
	7440-50-8	Copper	4.5	บ		P	
	7439-89-6	Iron	97.7	บ		P	
	7439-92-1	Lead	3.2			F	
	7439-95-4	Magnesium	10400	_		P	<b> </b>
	7439-96-5	Manganese	6.0	B		P	 
	7439-97-6	Mercury_	0.20	U		cv	
	7440-02-0	Nickel	8.6	U		P	
	7440-09-7	Potassium	2250	B		P	
i	7782-49-2	Selenium	0.50	U		F	
ĺ	7440-22-4	Silver	8.1	U		P	1
	7440-23-5	Sodium	99800			P	
i	7440-28-0	Thallium	0.70	Ū	-WN	F	7
	7440-62-2	Vanadium	4.2	U		p <sup>-</sup>	
i	7440-66-6	Zinc	118		E	P_	W
		Cyanide		_		NR	
		-		_			
				_			

lor	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
lor	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
Commer	nts:						



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/5/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### EXECUTIVE SUMMARY

Tetrachloroethene was the only target compound list (TCL) compound detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Seven treatment system samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 5, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1~8	3179	05/05/91
S1-8Dup	3181	05/05/91
S1-8TB	3182	05/05/91
S2-6	3184	05/05/91
S4-6	3186	05/05/91



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
    - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

Since samples were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

### A. Initial

Initial calibration criteria were met.

### B. Continuing

Continuing calibration criteria were met with the exception of the % difference for 2-butanone (actual 30.7-criteria 25) on May 13,1991 and 2-butanone (actual 36.6-criteria 25) on May 14, 1991. The data were not affected.

### IV. Blanks

Acetone was detected in method blank VBLK02 (1J) and in S1-8TB (7BJ). Methylene chloride was detected in method blank VBLK01 (1J) and in S108TB (2J). Acetone reported in the trip blank (S1-8TB) was qualified as less than the reported value.

### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.



### VII. Field Duplicates

Tetrachloroethene was detected in the sample at 1900 ppb, the field duplicate at 1700 ppb, in the MS at 1700 ppb, and in the MSD at 1500 ppb (RSD 9.6). The data are acceptable.

### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

### IX. TCL Compound Identification

Target compounds were properly identified.

### X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data. 1,1,1-trichloroethane (13 ppb) was rejected (R) from the MS since it was not duplicated in the sample, field duplicate, or MSD.

### XI. Tentatively Identified Compounds

No TICs were detected.

### XII. System Performance

System performance requires attention. Manual integrations should be addressed. All samples exceeded the required holding time.

### XIII. Overall Assessment of Data for a Case

All aromatic compounds were qualified as estimates.

1,1,1-Trichloroethane was rejected in the MS analysis.

### VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

S1-8

:\_<del>00020</del>-----

Matrix: (soil/water) WATER Lab Sample ID: 3179

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2581

\_evel: (low/med) LOW
Date Received: 5/5/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACK Dilution Factor: 12.50

### CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug	J/Kg) UG/L	Ω	
!		!		- ;
1 74-87-3	Chloromethane	120.	:U	1
1 74-83-9	Bromomethane	120.	l U	;
75-01-4	Vinyl Chloride	120.	:U	:
1 75-00-3	Chloroethane	120.	١U	;
1 75-09-2	Methylene Chloride	.1 62.	: U	- !
67-64-1	Acetone	1 120.	١U	;
75-15-0	Carbon Disulfide	1 62.	١U	ł
1 75-35-4	1,1-Dichloroethene	62.	١U	;
1 75-34-3	1,1-Dichloroethane	62.	:U	- 1
1 540-59-0	1,2-Dichloroethene (total)	62.	١U	:
1 67-66-3	Chloroform	62.	!U	:
107-06-2	1,2-Dichloroethane	1 62.	!U	;
1 78-93-3	2-Butanone	120.	;U	:
71-55-6	1,1,1-Trichloroethane	: 62.	:U	;
÷ 56-23-5	Carbon Tetrachloride	62.	! U	1
108-05-4	Vinyl Acetate	120.	١U	- 1
1 75-27-4	Bromodichloromethane	62.	١U	1
78-87-5	1,2-Dichloropropane	62.	:U	;
110061-01-5	cis-1,3-Dichloropropene	: 62.	١U	-
79-01-6	Trichloroethene	62.	١U	;
124-48-1	Dibromochloromethane	1 62.	:U	:
79-00-5	1,1,2-Trichloroethane	1 62.	:U	:
1 71-43-2	Benzene	1 62.	רח:	;
110061-02-6	Trans-1.3-Dichloropropene	1 62.	١U	ŀ
75-25-2	Bromoform	62.	ΙÜ	ï
108-10-1	4-metny1-2-Pentanone	. i20.	ιÙ	i
: 591-78-6	2-Hexanone	120.	ŀU	:
127-18-4	Tetrachloroethene	1900.	;	}
1 79-34-5	1,1,2,2-Tetrachloroethane	1 62.	ΙU .	;
108-88-3	Toluene	62.	:07	;
108-90-7	Chlorobenzene	1 62.	: u 1	:
100-41-4	Ethylbenzene	62.	:n7	;
100-42-5	Styrene	62.	:n 7	1
1330-20-7	Xylene (total)	l 62.	Lu:	;
!		·		. !

### TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

S1 -8

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (Soil/water) WATER Lab Sample ID: 3179

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2581

Level: (low/med) LOW Date Received: 5/ 5/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACk Dilution Factor: 12.50

CONCENTRATION UNITS:

Number TICs four	UG/L			
; ; CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	; Q ;
<u>'</u>		:		
3				r i
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		,	•	
28			!	
29				
		1 1		;

FORM I VOA-TIC

# VOLATILE ORGANICS ANALYSIS DATA SHEET

S1-8DUP

Lab Name: PACE Contract:

Matrix: (Soil/water) WATER Lab Sample ID: 3181

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2584

Level: (low/med) LOW Date Received: 5/5/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACk Dilution Factor: 12.50

T4-87-3Chloromethane			CONCENTRA	ATION UN	ITS:		
74-83-9Bromomethane	CAS NO.	COMPOUND	(ug/L or	ug/kg)	UG/L	α	
74-83-9Bromomethane							;
74-83-9Bromomethane       120.   U         75-01-4Vinyl Chloride       120.   U         75-09-2Methylene Chloride       62.   U         67-64-1	1 74-87-3	Chloromethane _		:	120.	١IJ	:
75-01-4					120.	١U	- }
75-00-3Chloroethane	75-01-4	Vinvl Chloride		¦	120.	; U	;
75-09-2Methylene Chloride	75-00-3	Chloroethane		;	120.	١U	;
67-64-1	1 75-09-2	Methylene Chlor	ıde		62.	ıυ	;
75-35-41,1-Dichloroethene	67-64-1	Acetone		:	120.	; U	;
75-35-41,1-Dichloroethene	75-15-0	Carbon Disulfid	 e		62.	١U	;
75-34-31,1-Dichloroethane	75-35-4	1.1-Dichloroeth	ene	;	62.	١U	-
540-59-01,2-Dichloroethene (total)   62.   U   67-66-3					62.	١U	;
67-66-3Chloroform   62.   U   107-06-21,2-Dichloroethane   62.   U   78-93-32-Butanone   120.   U   71-55-61,1,1-Trichloroethane   62.   U   56-23-5Carbon Tetrachloride   62.   U   108-05-4Vinyl Acetate   120.   U   75-27-4Bromodichloromethane   62.   U   78-87-51,2-Dichloropropane   62.   U   10061-01-5cis-1,3-Dichloropropene   62.   U   79-01-6Trichloroethane   62.   U   79-00-51,1,2-Trichloroethane   62.   U   71-43-2Benzene   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-26-2Bromoform   62.   U   79-04-5Tetrachloroethane   120.   U   127-18-4Tetrachloroethane   120.   U   127-18-4Tetrachloroethane   120.   U   108-88-3Toluene   62.   U   108-90-7Chlorobenzene   62.   U   100-41-4Ethylbenzene   62.   U   100-42-5	540-59-0	1.2-Dichloroeth	ene (total)	;	62.	١U	1
107-06-21, 2-Dichloroethane	67-66-3	Chloroform			62.	١U	1
78-93-32-Butanone	1 107-06-2	1.2-Dichloroeth	ane	;	62.	١U	;
71-55-61,1,1-Trichloroethane   62.   U   56-23-5Carbon Tetrachloride   62.   U   108-05-4Vinyl Acetate   120.   U   75-27-4Bromodichloromethane   62.   U   78-87-51,2-Dichloropropane   62.   U   10061-01-5cis-1,3-Dichloropropene   62.   U   79-01-6Trichloroethene   62.   U   124-48-1Dibromochloromethane   62.   U   79-00-51,1,2-Trichloroethane   62.   U   71-43-2Benzene   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   591-78-62-Hexanone   120.   U   127-18-4Tetrachloroethane   120.   U   127-18-4Tetrachloroethane   62.   U   108-88-3Toluene   62.   U   108-90-7Chlorobenzene   62.   U   100-41-4Ethylbenzene   62.   U   100-42-5Styrene   62.   U	78-93-3	2-Butanone			120.	١U	;
108-05-4	71-55-6	1.1.1-Trichloro	ethane		62.	١U	}
108-05-4Vinyl Acetate					62.	¦U	;
75-27-4Bromodichloromethane	108-05-4	Vinvl Acetate		;	120.	ŧU	1
78-87-51,2-Dichloropropane   62.  U   10061-01-5cis-1,3-Dichloropropene   62.  U   79-01-6Trichloroethene   62.  U   124-48-1Dibromothloromethane   62.  U   79-00-51,1,2-Trichloroethane   62.  U   71-43-2Benzene   62.  U   62.  U   62.  U   62.  U   62.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U   63.  U	75-27-4	Bromodichlorome	thane	;	62.	: U	}
10061-01-5cis-1,3-Dichloropropene	1 78-87-5	1.2-Dichloropro	pane		62.	١U	;
79-01-6Trichloroethene       62. IU         124-48-1Dibromochloromethane       62. IU         79-00-51,1,2-Trichloroethane       62. IU         71-43-2Benzene       62. IU         10061-02-6Trans-1,3-Dichloropropene       62. IU         75-25-2Bromoform       62. IU         108-10-14-methyl-2-Pentanone       120. IU         127-18-62-Hexanone       120. IU         127-18-4Tetrachloroethene       1700. I         79-34-51,1,2,2-Tetrachloroethane       62. IU         108-88-3Toluene       62. IU         100-41-4Ethylbenzene       62. IU         100-42-5Styrene       62. IU	110061-01-5	cis-1.3-Dichlor	ppropene		62.	:U	}
124-48-1Dibromothloromethane	: 79-01-6	Trichloroethene		;	62.	IU	;
79-00-51,1,2-Trichloroethane       62. [U]         71-43-2Benzene       62. [U]         10061-02-6Trans-1,3-Dichloropropene       62. [U]         75-25-2Bromoform       62. [U]         108-10-14-methyl-2-Pentanone       120. [U]         591-78-62-Hexanone       120. [U]         127-18-4Tetrachloroethene       1700. [U]         79-34-51,1,2,2-Tetrachloroethane       62. [U]         108-88-3Toluene       62. [U]         100-41-4Ethylbenzene       62. [U]         100-42-5Styrene       62. [U]	124-48-1	Dibromochlorome	thane	;	62.	١U	;
71-43-2Benzene					62.	١U	;
10061-02-6Trans-1,3-Dichloropropene	1 71-43-2				62.	:uJ	:
75-25-2Bromoform	110061-02-6	Trans-1.3-Dichl	propropene	;	62.	١U	;
108-10-14-metnyl-2-Pentanone					62.	: U	;
591-78-62-Hexanone	108-10-1	4-Methyl-2-Pent	anone	;	120.	ιU	ì
127-18-4Tetrachloroethene	: 591-78-6	2-Hexanone		!	120.	:U	;
79-34-51,1,2,2-Tetrachloroethane   62.   U   108-88-3Toluene   62.   U   108-90-7Chlorobenzene   62.   U   100-41-4Ethylbenzene   62.   U   100-42-5Styrene   62.   U   100-42-5Styrene   62.   U   100-42-5	127-18-4	Tetrachloroethe		;	1700.	;	;
108-88-3Toluene					€£.	: ប	- 1
108-90-7Chlorobenzene					62.	:uJ	1
100-41-4Ethylbenzene  62.  UJ	108-90-7	Chlorobenzene			62.	:n7	;
1 100-42-5Styrene 62. [U]					62.	: U )	;
1330-20-7Xylene (total) 62.  UJ	100-42-5	Styrene			62.	:n7	;
1	1 1330-20-7	Xylene (total)		1	62.	107	;
	1	.,		;		. !	!

### TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

Case No.: EPC

Lab Code: PACE

Number TICs found:

S1-8DUP

SDG No.:

00027

Matrix: (soil/water) WATER Lab Sample ID: 3181

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2584

Level: (low/med) LOW Date Received: 5/ 5/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACk Dilution Factor: 12.50

SAS No.:

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

FORM I VOA-TIC

\_\_\_\_\_

# VOLATILE ORGANICS ANALYSIS DATA SHEET

S1-8TB

Lab Name: PACE Contract:

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2593

evel: (low/med) LOW Date Received: 5/ 5/91

% Moisture: not dec.100.
Date Analyzed: 5/14/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND		ATION UNI ug/kg) U		a 	-
74-87-3 74-83-9 75-01-4 75-09-2 67-64-1 75-35-4 75-34-3 107-06-2 107-06-2 108-05-4 108-05-4 10061-01-5 124-48-1 179-00-5 108-10-1 108-10-1 108-10-1 127-18-4 127-18-4	-Chloromethane -Bromomethane -Vinyl Chloride -Chloroethane -Methylene Chloride -Acetone -Carbon Disulfide -1,1-Dichloroethan -1,2-Dichloroethan -1,2-Dichloroethan -1,2-Dichloroethan -2-Butanone -1,1,1-Trichloroet -Carbon Tetrachlor -Vinyl Acetate -Bromodichlorometh -1,2-Dichloropropa -cis-1,3-Dichlorop -Trichloroethane -Dibromochlorometh -1,1,2-Trichloroet -Benzene -Trans-1,3-Dichlor -Bromoform -4-Metnyl-2-Pentan -2-Hexanone -Tetrachloroethene	tehanehanehanehane	ug/kg) U			
108-88-3 108-90-7 100-41-4	-1,1,2,2-Tetrachlo -Toluene -Chlorobenzene -Ethylbenzene -Styrene -Xylene (total)			5. 5. 5. 5.	; ; n.) ; n.) ; n.) ; n.)	

# TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: 31-8TB

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00033

Matrix: (Soil/water) WATER

Lab Sample ID: 3182

mample wt/vol: 5. (g/mL) ML Lab File ID: J2593

evel: (low/med) LOW

Date Received: 5/5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

olumn: (pach/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	: : RT !======	: EST. CONC.	: α : : α : !=====:
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30;				
	<b>!</b>	_	;	;

FORM I VOA-TIC

S2-6

Date Received: 5/5/91

Lab Name: PACE Contract:

evel: (low/med) LOW

00039

\_ab Code: PACECase No.: EPCSAS No.: SDG No.:atrix: (soil/water) WATERLab Sample ID: 3184

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2594

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACk Dilution Factor: 1.00

### TENTATIVELY IDENTIFIED COMPOUNDS

Contract: Lab Name: PACE

: 52-6

SDG No.:

00040

Matrix: (Soil/water) WATER

Lab Sample ID: 3184

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2594

hevel: (low/med) LOW

Date Received: 5/5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	   RT	: : EST. CONC.	 : Q : !=====:
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FORM I VDA-TIC

### VOLATILE ORGANICS ANALYSIS DATA SHEET

datrix: (soil/water) WATER Lab Sample ID: 3186

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2586

\_evel: (low/med) LOW Date Received: 5/ 5/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACk Dilution Factor: 5.00

### CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/kg) UG/L Ω -----74-87-3-----Chloromethane \_\_\_\_\_: : U 50. 74-83-9-----Bromomethane\_\_\_\_: 50. :U . 50. :U 75-00-3-----Chloroethane\_\_\_\_\_: 50. : U 75-09-2----Methylene Chloride\_\_\_\_\_ 25. ¦ U 67-64-1-----Acetone \_\_\_\_ 50. :U 75-15-0-----Carbon Disulfide\_\_\_\_: 25. :U 75-35-4----1,1-Dichloroethene\_\_\_\_: 25. : U 75-34-3-----1,1-Dichloroethane\_\_\_\_: 25. : U 540-59-0----1,2-Dichloroethene (total)\_\_; 25. : U 67-66-3-----Chloroform\_\_\_\_\_: 25. !U 25. 107-06-2----1,2-Dichloroethane\_\_\_\_\_ 1U 78-93-3-----: 50. ; U 71-55-6----1,1,1-Trichloroethane \_\_\_\_\_: 25. : U 56-23-5-----Carbon Tetrachloride\_\_\_\_\_: ;U 25. :U 50. 75-27-4----Bromodichloromethane\_\_\_\_: 25. : U 78-87-5----1,2-Dichloropropane \_\_\_\_\_: 25. :U 110061-01-5-----cis-1,3-Dichloropropene \_\_\_\_: 25. :U 79-01-6-----Trichloroethene :U 25. 124-48-1----Dibromochloromethane\_\_\_\_\_ : U 25. 79-00-5-----1,1,2-Trichloroethane \_\_\_\_\_: !U 25. 71-43-2----Benzene \_\_\_\_\_ :07 25. 110061-02-6-----Trans-1,3-Dichloropropene\_\_; 25. : U 75-25-2-----Bromoform \_\_\_\_\_: 108-10-1-----4-Methyl-2-Pentanone\_\_\_\_: 25. ij 50. ;;; 591-78-6----2-Hexanone\_\_\_\_: 50. : U 127-18-4----Tetrachloroethene 850. ! 79-34-5----1,1,2,2-Tetrachloroethane \_\_: 25. : U 108-88-3-----Toluene \_\_\_\_\_: 25. :uJ 108-90-7-----Chlorobenzene 25. :07 100-41-4----Ethylbenzene\_\_\_\_ 25. ; U.) 100-42-5-----Styrene \_\_\_\_\_: 25. ru 7 : 1330-20-7-----Xylene (total)\_\_\_\_\_: 25. :07

TENTATIVELY IDENTIFIED COMPOUNDS

Contract:

Lab Name: PACE ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00046

Matrix: (Soil/water) WATER

Lab Sample ID: 3186

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2586

evel: (low/med) LOW

Date Received: 5/5/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

olumn: (pack/cap) PACk

Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or 'ug/kg) UG/L

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CAS NUMBER	COMPOUND NAME	; : RT !======	EST. CONC.	; ; Q ;
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FORM I VOA-TIC



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA
METHOD 524.2 ANALYSES

Samples Collected 5/5/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### EXECUTIVE SUMMARY

All postive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Five treatment system samples were collected and submitted to PACE, Inc. on May 5, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-8FB	3180	05/05/91
S3-6	3185	05/05/91
S6-8	3187	05/05/91
S6-8DUP	3188	05/05/91
S6-8TB	3189	05/05/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/16/91.

#### B. Continuing

Continuing calibration criteria were met on 5/17/91 and 5/18/91.

#### IV. Blanks

The trip blank, field blank, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-8. The percent recovery for 1,1-dichloroethene was below QC criteria in the MS. The percent recovery for benzene was below QC criteria in the MSD. The



relative percent difference for 1,1-dichloroethene was above QC criteria. No positive results for these compounds were reported, so no data were qualified.

#### VII. Field Duplicates

Samples S6-8 and S6-8DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07



Compound	MDL (ug/L)
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for tetrachloroethene in Sample S3-6 (230 ug/L) was well beyond the calibration range of the instrument (25 ug/L). This result was qualified as estimated. This sample should have been submitted for CLP volatile organics analyses.

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

Two TICs were reported in the trip blank at retention times of 9.38 and 11.35. These TICs were rejected. No other TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Unifirst	PACE Project	Number:	810505500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031880 05/05/91 05/05/91 <u>S6-8 Dup</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND () ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L	0.5	ND
	ug/L	0.5	ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L	0.5	ND
	ug/L	0.5	ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L	0.5	ND
	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND
Xylene, total	ug/L	0.5	

MDL

Method Detection Limit Not detected at or above the MDL. ND

Unifirst	PACE Project	Number:	810505500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031805 05/05/91 05/05/91 S1-8 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U.J ND   ND   ND   ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	- ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L _ ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND _
MDL Method Detection Limit ND Not detected at or above th	e MDL.		

Unifirst	PACE Project	Number:	81050555000
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 00到9年6 05/05/到1 05/05/并1 53-6
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WJ ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	0.01 CD CD LD CD D CD D CD CD CD
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	(M DN) 10.01 10.01 1200 1300 1300 1300 1300 1300 1300 13
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	NDW NDW 230J NDW NDW NDW
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND W

MDL

ND

Method Detection Limit Not detected at or above the MDL.

Unifirst	PACE Project N	lumber:	810505500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031872 05/05/91 05/05/91 S6-8
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	MODIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND WO ND ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/t ug/t ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit Not detected at or above the MDL. ND

			•
Unifirst	PACE Project	Number:	810505500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031880 05/05/91 05/05/91 S6-8 Dup
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND (L) ND (ND (ND (ND (ND (ND (ND (ND (ND (ND (
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

Method Detection Limit Not detected at or above the MDL. MDL ND

Unifirst	PACE Project	Number:	810505500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0031899 05/05/91 05/05/91 <u>S6-8 TB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WJ ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL ND

Method Detection Limit Not detected at or above the MDL.

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	EPA SAMPLE NO.
1	56-8 TB

Lab Name:		Contract:			i
Lab Code:	Case No.:	SAS No.: _	SDG	No.:	
Matrix: (soil/wate	er)	Lab	b Sample ID		
Sample wt/vol:	(g/mL)	Lat	b File ID:		
Level: (low/med)	)	Dat	te Received	·	_
1 Moisture: not de	ec	Dat	te Analyzed		
Column: (pack/caj	p)	Dil	lution Facto	or:	
Number TICs found	1:COMPOUND NA	(ug/L or	ATION UNITS  Ug/Kg) US/	<u></u>	
CAS NUMBER	COMPOUND NA	mesekane   e. Mr	i		: :
					<u> </u> !
2	- hour ATI	phatic]	11, 35	64 R	¦¦
4					
1 5					
0				·	!!
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1 11.					!
1 12					!
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11				l	1
			1	10 7/1	191

FORM I VOA-TIC

1/87 Rev.



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/6/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Tetrachloroethene was the only target compound list (TCL) compound detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Six treatment system samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 6, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
<b>S1-</b> 9	3205	05/06/91
S1-9Dup	3206	05/06/91
S1-9TB	3207	05/06/91
S4-7	3212	05/06/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
    - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

Since samples were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met.

#### B. Continuing

Continuing calibration criteria were met with the exception of the % difference for 2-butanone (actual 30.7-criteria 25) on May 13,1991 and 2-butanone (actual 36.6-criteria 25) on May 14, 1991. The data were not affected.

#### IV. Blanks

No contamination was found in the trip blank or in VBLK01. Acetone was detected in VBLK02 (1J). The data were not affected.

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.



#### VII. Field Duplicates

Tetrachloroethene was detected in the sample at 1800 ppb, the field duplicate at 2200 ppb, in the MS at 2100 ppb, and in the MSD at 2000 ppb (RSD 8.4). The data are acceptable.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

Target compounds were properly identified.

#### X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data. Trichloroethene (S1-9) and 1,1,1-trichloroethane (S1-9 Dup) were rejected (R). Trichloeothene was not duplicated in the field duplicate, MS, or MSD and 1,1,1-trichloroethane was not duplicated in the sample, MS or MSD.

#### XI. Tentatively Identified Compounds

No TICs were detected.

#### XII. System Performance

System performance requires attention. Manual integrations should be addressed. All sample analyses exceeded the required holding times.

#### XIII. Overall Assessment of Data for a Case

All aromatic compounds were qualified as estimates.

Trichloroethene was rejected in Sample S1-9.

1,1,1-Trichloroethane was rejected in Sample S1-9DUP.

# VOLATILE ORGANICS ANALYSIS DATA SHEET

S1 -9

ETH DMITTLE NU.

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No 0020

Matrix: (Soil/water) WATER Lab Sample ID: 3205

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2595

\_evel: (low/med) LOW
Date Received: 5/ 7/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACk Dilution Factor: 12.50

CAS NO. COMPOUND (ug/L or ug/kg) UG/L 0    74-87-3Chloromethane			CONCENTR	INU NOITA	TS:		
74-87-3Chloromethane       120. U         74-83-9Bromomethane       120. U         75-01-4Vinyl Chloride       120. U         75-00-3Chloroethane       120. U         75-09-2Methylene Chloride       62. U         67-64-1Acetone       62. U         75-15-0Carbon Disulfide       62. U         75-34-31, 1-Dichloroethene       62. U         75-34-31, 1-Dichloroethane       62. U         540-59-01, 2-Dichloroethane       62. U         67-66-3Chloroform       62. U         107-06-21, 2-Dichloroethane       62. U         78-93-3Cabutanone       120. U         79-33-3Carbon Tetrachloride       62. U         108-05-4Vinyl Acetate       120. U         75-27-4Bromodichloromethane       62. U         78-87-51, 2-Dichloropropane       62. U         10061-01-5	CAS NO.	COMPOUND	(ug/L or	ug/kg) U	3/L	Ω	
74-83-9Bromomethane	!						- ;
74-83-9Bromomethane	74-87-3	Chloromethane			120.	Ü	:
75-01-4Vinyl Chloride	1 74-83-9	Bromomethane			120.	: U	;
75-00-3Chloroethane					120.	۱U	:
75-09-2Methylene Chloride	1 75-00-3	Chloroethane		;	120.	١U	!
67-64-1	1 75-09-2	Methylene Chlor		;	62.	¦ U	:
75-35-41,1-Dichloroethene	67-64-1	Acetone		;	120.	¦U	;
75-35-41,1-Dichloroethene	75-15-0	Carbon Disulfid	 e		62.	: U	;
75-34-31,1-Dichloroethane	1 75-35-4	1.1-Dichloroeth	ene	;	62.	١U	1
540-59-01,2-Dichloroethene (total)   62.   U   67-66-3Chloroform   62.   U   107-06-21,2-Dichloroethane   62.   U   78-93-32-Butanone   120.   U   56-23-5Carbon Tetrachloride   62.   U   108-05-4Vinyl Acetate   120.   U   75-27-4Bromodichloromethane   62.   U   78-87-51,2-Dichloropropane   62.   U   79-01-6Trichloroethene   28.   U   79-01-6Trichloroethane   62.   U   79-03-51,1,2-Trichloroethane   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-25-2	1 75-34-3	1.1-Dichloroeth	ane	;	62.	: U	ł
67-66-3Chloroform					62.	:ប	;
107-06-21,2-Dichloroethane	67-66-3	Chloroform		:	62.	: U	1
78-93-32-Butanone	107-06-2	1.2-Dichloroeth	ane	;	62.	: U	;
71-55-61,1,1-Trichloroethane   62.   U   108-05-4Vinyl Acetate   120.   U   75-27-4Bromodichloromethane   62.   U   78-87-51,2-Dichloropropane   62.   U   10061-01-5Trichloroethane   62.   U   79-01-6Trichloroethane   62.   U   79-00-51,1,2-Trichloroethane   62.   U   79-00-51,1,2-Trichloroethane   62.   U   75-25-2Bromoform   62.   U   75-25-2Bromoform   62.   U   75-18-4Tetrachloroethane   120.   U   127-18-4Tetrachloroethane   120.   U   127-18-4Tetrachloroethane   120.   U   127-18-4Tetrachloroethane   120.   U   127-18-4Toluene   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.	1 78-93-3	C-Butanone		;	120.	:U	1
56-23-5Carbon Tetrachloride	1 71-55-6	1.1.1-Trichloro	ethane	:	ez.	١U	:
108-05-4	56-23-5	Carbon Tetrachl	oride	:	62.	١U	1
75-27-4Bromodichloromethane	108-05-4	Vinvl Acetate			120.	¦U	;
78-87-51,2-Dichloropropane   62.  U   10061-01-5cis-1,3-Dichloropropene   62.  U   79-01-6Trichloroethene   28.  U   124-48-1Dibromochloromethane   62.  U   79-00-51,1,2-Trichloroethane   62.  U   71-43-2Benzene   62.  U   71-43-2Bromoform   62.  U   75-25-2Bromoform   62.  U   75-25-2Bromoform   62.  U   75-18-4Tetrachloroethene   120.  U   127-18-4Tetrachloroethene   120.  U   127-18-4Tetrachloroethene   1800.   79-34-51,1,2,2-Tetrachloroethane   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U   62.  U	75-27-4	Bromodichlorome	thane	!	62.	١U	:
10061-01-5cis-1,3-Dichloropropene					62.	١U	;
79-01-6Trichloroethene   32.   7	110061-01-5	cis-1.3-Dichlor	opropene	:	62.		1
124-48-1Dibromochloromethane	79-01-6	Trichloroethene		:	32.	124	ţ
79-00-51,1,2-Trichloroethane	1 124-48-1	Dibromochlorome	thane	:	62.	:U	ł
10061-02-6Trans-1,3-Dichloropropene	79-00-5	1,1,2-Trichloro	ethane	;	62.		;
10061-02-6Trans-1,3-Dichloropropene	71-43-2	Benzene					1
108-10-14-Methyl-l-Pentanone	110061-02-6	Trans-1,3-Dichl	propropene	1	62.	!U	:
108-10-14-Methyl-l-Pentanone	1 75-25-2	Bromoform		;	62.	ιυ	:
127-18-4Tetrachloroethene	1 108-10-1	4-Methyl-I-Pent	anone	'	120.		i
127-18-4Tetrachloroethene	591-78-6	2-Hexanone		;	120.	١U	1
108-88-3Toluene 62. [U]	127-18-4	Tetrachloroethe	ne	;		1	1
10146116						· — ,	:
1 108-90-7	108-88-3	Toluene				_	:
	108-90-7	Chlorobenzene		!		-	1
100-41-4Ethylbenzene  62.  U	100-41-4	Ethylbenzene		;		. – .	1
100-42-5Styrene  62.  U	100-42-5	Styrene		;			1
1 1330-20-7Xylene (total)  62. (U-)	1330-20-7	Xylene (total)		:	62.	יט:	;
						_	_ ;

### TENTATIVELY IDENTIFIED COMPOUNDS

Contract: Lab Name: PACE

SDG No.:

00021

Matrix: (soil/water) WATER

Lab Sample ID: 3205

Jample wt/vol: 5. (g/mL) ML

Lab File ID: J2595

evel: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

olumn: (pack/cap) PACK

Number TICs found: 0

Dilution Factor: 12.50

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

; CAS NUMBER ;	COMPOUND NAME	; ! RT	; ! EST. CONC.	
· ·		;		
		!		:
3		!		!
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23		!	!	
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27				
28		;		
29			!	
30			!	
			`	

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#### VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00027

1atrix: (soil/water) WATER

Lab Sample ID: 3206

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2596

.evel: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CAS NO.	COMPOUND	CONCENTRA (ug/L or	– – –		Ω
1			!		
1 74-87-3	Chloromethane		;	120.	: U
1 74-83-9	Bromomethane_		!	120.	;U ;
1 75-01-4	Vinyl Chloride		!	120.	:ប :
1 75-00-3	Chloroethane		:	120.	: U :
75-09-2	Methylene Chlo	ride	:	62.	: U :
67-64-1	Acetone		:	120.	:U :
1 75-15-0	Carbon Disulf:	.de	;	62.	וט :
1 75-35-4	1,1-Dichloroet	hene	;	62.	:U :
1 75-34-3	1,1-Dichloroet	hane	:	62.	10 1
1 540-59-0	1,2-Dichloroet	hene (total)	:	62.	:U :
1 67-66-3	Chloroform		:	62.	: U :
107-06-2	1.2-Dichloroet	hane	}	62.	: U:
1 78-93-3	2-Butanone		;	120.	: :
1 71-55-6	1,1,1-Trichlor	oethane	1	<i>بخد</i>	18R1
1 56-23-5	Carbon Tetract	loride	;	62.	:U :
108-05-4	Vinyl Acetate		:	120.	: U:
75-27-4	Bromodichlorom	ethane	!	62.	:U :
1 78-87-5	1,2-Dichloropr	opane	;	62.	:0 :
110061-01-5	cis-1,3-Dichlo	ropropene	;	62.	: ט:
1 79-01-6	Trichloroethen	e	:	62.	:U :
124-48-1	Dibromochlorom	ethane		62.	: U :
1 79-00-5	1,1,2-Trichlor	oethane	:	62.	;U ; ;
1 71-43-2	Benzene			62.	: 107
110061-02-6	Trans-1,3-Dich	loropropene	;	62.	:U :
1 75-25-2	Bromoform		;	62.	; U ;
108-10-1	4-Methyl-2-Pen	tanone	;	120.	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
591-78-6	2-Hexanone		:	120.	: U :
127-18-4	Tetrachloroeth	ene	!	2200.	1 1
1 79-34-5	1,1,2,2-Tetrac	hloroethane .	:	62.	;U; ;
108-88-3	Toluene		;	62.	: ĻU;
108-90-7	Chlorobenzene		;	62.	: (1)
100-41-4	Ethylbenzene		;	62.	:n j :
100-42-5	Styrene		;	62.	:n j :
1330-20-7	Xylene (total)		;	62.	:0) :
!	•		!		: :

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: 51 -9DUP

Matrix: (soil/water) WATER

Lab Sample ID: 3206

Dample wt/vol: 5. (g/mL) ML

Lab File ID: J2596

evel: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

clumn: (pacl/cap) PACk

Dilution Factor: 12.50

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME		: : EST. CONC.	: 0 : :=====
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FORM I VOA-TIC

1/87 Rev.

#### VOLATILE ORGANICS ANALYSIS DATA SHEET

S1-9 TB

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00034

1atrix: (soil/water) WATER Lab Sample ID: 3208

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2588

.evel: (low/med) LOW Date Received: 5/ 7/91

% Moisture: not dec.100.
Date Analyzed: 5/14/91

Column: (pack/cap) PACk Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRA			Ω	
74-87-3 74-83-9 75-01-4 75-09-2 75-35-4 75-34-3 75-66-3 107-06-2 108-05-4 108-05-4 78-87-5 10061-01-5	-Chloromethane -Bromomethane -Vinyl Chloride -Chloroethane -Methylene Chloride -Acetone -Carbon Disulfide -1,1-Dichloroethan -1,2-Dichloroethan -Chloroform -1,2-Dichloroethan	e (total) hane lde ane ropene	ug/Kg) (		ט ו ו ט	
79-00-5   71-43-2   10061-02-6   75-25-2   108-10-1   591-78-6   127-18-4   79-34-5   108-88-3   108-90-7   100-41-4	-Dibromochlorometh -1,1,2-Trichloroet -Benzene -Trans-1,3-Dichlor -Bromoform -4-Metnyl-2-Pentan -2-Hexanone -1,1,2,2-Tetrachlo -Toluene -Chlorobenzene -Ethylbenzene -Xylene (total)	opropene		5.5.5.5.0.5.5.5.5.5.5.5.5.5.5.5.5.5.5.5		

#### TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

Matrix: (Soil/water) WATER

00035

ample wt/vol: 5. (g/mL) ML

Lab File ID: J2588

evel: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

plumn: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	: COMPOUND NAME	; ! RT	: : EST. CONC.	; Q
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1/87 Rev.

## VOLATILE ORGANICS ANALYSIS DATA SHEET

EFA SAMPLE NU.

Contract: Lab Name: PACE

Sample wt/vol: 5. (g/mL) ML

Matrix: (soil/water) WATER

Lab Sample ID: 3212

Byc 6/19/9/

Lab File ID: J2597

\_evel: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CONCENTRAT	IUN	UNITS:	
			_

CAS NO.	COMPOUND	(ug/L or	ug/kg) UG/L	0	
!					¦
: 74-87-3	Chloromethane		: 50.	۱.	;
1 74-83-9	Bromomethane_		50.	: U	;
75-01-4	Vinyl Chloride	P	50.	; U	}
1 75-00-3	Chloroethane_		: 50.	: U	:
: 75-09-2	Methylene Chl	oride	1 25.	۱U	;
1 67-64-1	Acetone		: 50.	١U	}
1 75-15-0	Carbon Disulf	ide	25.	: U	1
1 75-35-4	1,1-Dichloroe	thene	: 25.	١U	1
	1,1-Dichloroe			١U	1
	1,2-Dichloroe			120	6/18/91
: 67-66-3	Chloroform		: 25.	١U	10//11
1 107-06-2	1,2-Dichloroe	thane	25.	ιυ	3
1 78-93-3	2-Butanone		50.	١U	:
1 71-55-6	1,1,1-Trichlon	roethane	10.	; J	;
1 56-23-5	Carbon Tetracl	loride	25.	١U	;
1 108-05-4	Vinyl Acetate		: 50.	١U	:
1 75-27-4	~Bromodichloron	nethane	1 25.	١U	:
1 78-87-5	1,2-Dichloropi	ropane	1 25.	រប	:
110061-01-5	cis-1,3-Dichlo	propropene	: 25.	١U	:
1 79-01-6	Trichloroether	ne	18.	; J	:
124-48-1	Dibromochlorom	methane	1 25.	: U	;
1 79-00-5	1,1,2-Trichlor	roethane	! 25.	:U (	:
1 71-43-2	Benzene		1 25.	:n?	:
110061-02-6	Trans-1,3-Dich	nloropropene	1 25.	; U	:
1 75-25-2	Bromoform		1 25.	: ហ	:
108-10-1	4-methyl-2-Per	ntanone	1 50.	÷υ	;
\$ 591-78-6	2-Hexanone		; 50.	: ប	:
1 127-18-4	Tetrachloroeth	ene	870.	;	:
1 79-34-5	1,1,2,2-Tetrac	hloroethane	: 25.	¦υ (	:
	Toluene		: 25.	۱nጎ	1
	Chlorobenzene		25.	inj	:
	Ethylbenzene			;u 🕽	:
1 100-42-5	Styrene		: 25.	רח:	1
1330-20-7	Xylene (total)		; 25.	:uJ	:
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# TENTATIVELY IDENTIFIED COMPOUNDS

Contract: Lab Name: PACE

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

00040 Lab Sample ID: 3212 Matrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2597

.evel: (low/med) LOW

Date Received: 5/ 7/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACk

Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER :	CONFIDENCE INFINE	ı KI	: EST. CONC.	Q
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FORM I VOA-TIC

1/87 Rev.



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA
METHOD 524.2 ANALYSES

Samples Collected 5/6/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

All postive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Foaming of the samples occurred during analysis of all samples except the field blank and the trip blank.

Chain of custody form No. 22895 was not signed by the sampler.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Six treatment system samples were collected and submitted to PACE, Inc. on May 6, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

 $\dot{}$  The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-9FB	3207	05/06/91
S2-7	3209	05/06/91
S3-7	3210	05/06/91
S6-9	3213	05/06/91
S6-9DUP	3214	05/06/91
S6-9TB	3215	05/06/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were analyzed outside the 7-day holding time but within th 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/16/91.

#### B. Continuing

Continuing calibration criteria were met on 5/17/91, 5/18/91, and 5/19/91.

#### IV. Blanks

The trip blank, field blank, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-9. The percent recoveries for 1,1-dichloroethene, trichloroethene, and benzene were below QC criteria in the MS and the MSD. The percent recovery for toluene



was below QC criteria in the MS. No positive results for those compounds were detected, so no data were qualified. However, these results were extremely poor.

#### VII. Field Duplicates

Samples S6-9 and S6-9DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

The compound 1,1-dichloroethene was reported in Sample S3-7. The spectra provided for the compound in the sample does not match that of 1,1-dichloroethene. The compound 1,1-dichloroethene was rejected from Sample S3-7 based on this incorrect identification.

All other TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45



Compound	MDL (ug/L)
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for tetrachloroethene in Samples S2-7 (53 ug/L) and S3-7 (340 ug/L) were well beyond the calibration range of the instrument (25 ug/L). These results for tetrachloroethene were qualified as estimated. Samples S2-7 and S3-7 should not have been submitted for Method 524.2 analyses.

All reported results for Sample S3-7 were quantified incorrectly. Correct results are as follows:

Compound	Corrected Result (ug/L)
cis-1,2-Dichloroethene	8.9
1,1,1-Trichloroethane	15.7
Trichloroethene	14.4
Tetrachloroethene	342

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.



#### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Results for Sample S3-7 were quantified incorrectly by the laboratory. Corrections have been made to the Form I which is included with this validation report.

Due to missed holding times on all samples, detection limits for all aromatic compounds have been qualified as estimated.

Results for tetrachloroethene in Samples S2-7 and S3-7 were qualified as estimated since the reported values exceeded the calibration range of the instrument.

1,1-Dichloroethene in Sample S3-7 was rejected as a false positive.

PACE Project Number: 810507501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0032070 05/06/91 05/07/91 S1-9 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 IVinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	MODIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND WJ EXP
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

### Unifirst

PACE Project Number: 810507501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0032097 05/06/91 05/07/91 <u>\$2</u> -7
ORGANIC ANALYSIS	•		
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W EX D ND 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND い ND い 2.4 J ND い ND い ND い
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	NDW NDW 53 J NDW ND W ND W
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	MD M7

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810507501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0032100 05/06/91 05/07/91 S3-7
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W EXA ALLAIND WS WS ND WS ND WS
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WJ ND WJ 36 15.75 ND WJ ND WJ
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN CN DN C
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W AOO 340 J ND W ND W ND W
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND W

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNITIES - CACE LIGHTER GROUPS	Unifirst	PACE Project Number:	810507501
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PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Uņits</u>	MDL	95 0032135 05/06/91 05/07/91 S6-9
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene cis-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W LCD 1/0/71 ND ND ND ND ND ND ND ND ND ND ND ND ND N
Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane 1,2-Dichloropropane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene trans-1,3-Dichloropropene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethyl benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Xylene, total	ug/L	0.5	ND ·

MDL

Method Detection Limit Not detected at or above the MDL. ND

Unifirst	PACE	Project	Number:	81050750	1
PACE Sample Number: Date Collected: Date Received: Parameter			<u>Units</u>	_MDL	95 0032143 05/06/91 05/07/91 <u>S6-9 Dup</u>
ORGANIC ANALYSIS					
VOLATILE ORGANICS BY 524.2 Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	MODIF:	IED	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WS ELLS A MO ND ND ND ND ND ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane			ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene			ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene			ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total			ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit Not detected at or above the MDL.

ND

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ı		n			1	•	`	

PACE Project Number: 810507501

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>		<u>Units</u>	MDL	95 0032151 05/06/91 05/07/91 S6-9 TB
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	MODIFIED	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WEXA 1/0/91 ND 1/0/91 ND 0 ND 0 ND 0 ND 0 ND 0
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	,	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	`	ug/L ug/L	0.5 0.5	ND

Method Detection Limit Not detected at or above the MDL. MDL

ND



# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
INORGANIC ANALYSES DATA

Samples Collected 5/6/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### **EXECUTIVE SUMMARY**

Metals analytical data presented for this sample delivery group were satisfactory. Some of the data were qualified as estimated. All unqualified positive sample data may be used without reservation.

One of the chain of custody forms submitted with these samples was not signed by the sampler.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
  - XII. Overall Assessment

# TRILLIUM

#### Data Validation

#### I. Holding Times

All metals analyses were conducted within acceptable holding times.

#### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected in any sample, data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of cadmium and silver, which was had recoveries below QC limits, and chromium, which had recovered above QC limits. None of these compounds was detected in the samples; however, detection limits for cadmium, silver, and chromium were qualified as estimated in Samples S6-9, S1-9, and S1-9FB.

#### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

One calibration blank and Field Blank S1-9FB contained zinc at 3 and 25 ppb, respectively. Zinc was qualified as less than the reported value in Sample S6-9.

# IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

# V. Matrix Spike Sample Analysis

Spike recoveries not meeting criteria are summarized below.

Sample	Analyte	Recovery (%)
S1-9	Arsenic Barium Thallium	73.8 55.0 63.6



Positive results and detection limits for arsenic, barium, and thallium were estimated (J).

# VI. Duplicate Sample Analysis

Duplicate analyses results for metals were satisfactory with the exception of zinc. The relative percent difference between S1-9 and the duplicate was above QC limits. Detection limits and positive results for zinc were qualified as estimated in Samples S1-9, S1-9FB, and S6-9.

# VII. Laboratory Control Sample Analyses

Laboratory control sample results were satisfactory.

# VIII. Furnace Atomic Absorption Analysis

Duplicate injections were performed for all samples and agreed within +20%.

The method of standard additions was not required.

# IX. ICP Serial Dilution Analysis

Serial dilutions were conducted on S1-9. All results met the validation criteria of 15%.

#### X. Detection Limits

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### XI. Sample Result Verification

Sample results were acceptable as reported.

#### XII. Overall Assessment

Positive results and detection limits for arsenic, barium, cadmium, chromium, silver, thallium, and zinc were qualified as estimated in Samples S1-9, S1-9FB, and S6-9 for the reasons discussed above. All other metals data may be used without reservation.

# 1 INORGANIC ANALYSES DATA SHEET

LPA SAMPLE NO.

		INORGANIC	ANALYSES DATA	SHEET	00015
ab Name: PAC	CE_INCORPORAT	red	Contract: E	PC	S1-9
Lab Code:	Ca	ase No.:	SAS No.	:	SDG No.:
atrix (soil/	water): WATE	ER		Lab Sampl	e ID: 3205.4
Level (low/me	ed): LOW_			Date Rece	ived: 05/07/91
Solids:		_0			
C	concentration	Units (ug	/L or mg/kg dr	y weight):	UG/L_
	CAS No.	Analyte	Concentration	C Q	м
	7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-99-1 7439-95-4 7439-95-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-23-5	Arsenic_Barium_Beryllium_Cadmium_Calcium_Chromium_Cobalt_Copper_Iron_Lead_Magnesium_Manganese_Mercury_Nickel_Potassium_Selenium_Silver_Sodium_Thallium_	1.0 19.0 1.1 3.0 88100 9.5 6.4 7.0 97.7 0.70 10900 1.5 0.20 8.6 3060 0.50 8.1 97700 0.70		
clor Before:	COLORLESS	Clarit	y Before: CLEA	R_ 1	
c.or After:	COLORLESS	Clarit	y After: CLEA	R_ A	artifacts:
omments:					

# 1 INORGANIC ANALYSES DATA SHEET

FA	SAMPLE	NO.
		1.0

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b Wana	DAGE THE	\D\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		Cambriant - 7	77.0			S1-9 FB
ab Name: PACE_INCORPORATED			contract: E		0001			
Lab Code:	ab Code: Case No.:			SAS No.	: _		SDG	No.:
atrix (s	oil/water)	: WATE	R		Lā	ab Samp	le ID	: 3207.0
Tevel (lo	ow/med):	LOW_	_	,	Da	ate Rec	eived	: 05/07/91
. Solids:			0					
	Concent	ration	Units (ug	/L or mg/kg dr	y w	veight)	: UG/1	ւ_
-	CAS	No.	Analyte	Concentration	С	Q	м	
	7429	-90-5	Aluminum	195_	ប៊		P_	
		-36-0	Antimony_				F	
	1	-38-2	Arsenic_	1.0_	ט	丁	F_	
		-39-3	Barium_	12.5	ט	Ī	P_	
	l l	-41-7	Beryllium	1.1	ט		P_	
	1	-43-9	Cadmium_	3.0	ן ט	<u> </u>	P	
	1	-70-2	Calcium_	448_	ט		P_	
	i i	-47-3	Chromium_	9.5	ַט	1	P_	
	1	-48-4	Cobalt	6.4	U		P_	
	ľ	-50-8	Copper	4.5	บ		P	
	ī	-89-6	Iron	97.7	ָּט		P_	
	7439	-92-1	Lead	0.60	ַט		<b>F</b> _  .	
<del>-</del>	1	-95-4	Magnesium	509	<b>ט</b>		P_	
	1	-96-5	Manganese	1.5_	ַ ט		P_	
			Mercury	0.20_	<b>ט</b>		CV	
	7440	-02-0	Nickel	8.6	ָּט		P_	
			Potassium		ַ ט		P_	
		1	Selenium_		ָט [		F_	
	7440		Silver			<u> </u>	P	
			Sodium		ָ ט		P_	
			Thallium_	0.70		<u> </u>	F_	
	<b>I</b>	-62-2	Vanadium_	4.2_	ָט		F_P_NR	
	7440	-66-6	Zinc	25.0	_ _	<u>T</u>	P_	
	1		Cyanide		_[_		NR	
					_ .		.	
Color Befo	ore: COLO	RLESS	Clarit	y Before: CLEA	R_		Textu	re:
lor Afte	er: COLO	RLESS	Clarit	y After: CLEA	R_		Artif	acts:
Comments:								
-	<del>-</del>	<del></del>						<del></del>
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								· · · · · · · · · · · · · · · · · · ·

# 1 INORGANIC ANALYSES DATA SHEET

EFA SAMPLE NO.

ab Name: PAC	E_INCORPORAT	ED	Contract: E	PC	s6-9 00017
Lab Code:	Ca	se No.:	SAS No.	:	SDG No.:
[atrix (soil/	water): WATE	R		Lab Sampl	e ID: 3213.5
Level (low/me	d): LOW_	_		Date Rece	eived: 05/07/91
Solids:	<del>,</del>	0			
С	oncentration	Units (ug	/L or mg/kg dry	y weight):	UG/L_
_	CAS No.	Analyte	Concentration	C Q	M
	7429-90-5	Aluminum	195	<u> </u>	<del>P</del>
	7440-36-0	Antimony_			F-
	7440-38-2	Arsenic	1.0		F <sup>-</sup>
	7440-39-3	Barium			P
		Beryllium	1.1		P
	7440-43-9	Cadmium			P_
	7440-70-2	Calcium	86800		<b>P</b>
	7440-47-3	Chromium	9.5		P_
	7440-48-4	Cobalt	6.4	ט	P_ P_ P_
	7440-50-8	Copper	4.5	ָן ט	P_
	7439-89-6	Iron		ָן ט	P_
	7439-92-1	Lead			F_  ·
	7439-95-4	Magnesium	10700_		P_
		Manganese			P_
		Mercury			CV
		Nickel		<u>U</u>	2_
	7440-09-7	Potassium		B	2
		Selenium_			<u>-</u>
		Silver		0 3 1	
		Sodium	93900_		- -
	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	Thallium_	0.70	::  ;	[-
	7440-62-2	Vanadium_			<u>-</u>
	7440-66-6	ZincCyanide	121_		P
		Cyanide			
clor Before:	COLORLESS	Clarit	y Before: CLEA	R_ 1	exture:
lor After:	COLORLESS	Clarit	y After: CLEA	R_ A	rtifacts:
omments:					



# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/7/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Data quality for this sample delivery group was excellent. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms. The chain of custody forms did not show that the samples were relinquished by the sampler.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Case Narrative

Six samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 7, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-10	3232	05/07/91
S1-10 DUP	3233	05/07/91
S1-10 TB	3235	05/07/91
S4-8	3239	05/07/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



# I. Holding Times

All samples except S1-10MS and S1-10MSD were analyzed within the 7-day holding for nonpreserved samples. Samples S1-10MS and S1-10MSD were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in Samples S1-10MS and S1-10MSD.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met on 4/24/91 (Instrument J).

# B. Continuing

Continuing calibration criteria were met on 5/14/91 with the exception of the % difference for chloromethane (actual 32.1; criteria 25) and 2-butanone (actual 39.9; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/13/91 with the exception of the % difference for chloromethane (actual 32.0; criteria 25) and 2-butanone (actual 38.9; criteria 25). Data were not affected.

### IV. Blanks

Methylene chloride was reported in the Method Blank VBLK1. No field samples were affected.



#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

# VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-10. Data were within acceptance criteria.

The compound 1,1,2,2-tetrachloroethane was reported in the matrix spike sample. Because this compound was not found in the field sample, duplicate, or the matrix spike duplicate, 1,1,2,2-tetrachloroethane in the matrix spike was rejected.

# VII. Field Duplicates

Tetrachloroethene was reported in the Samples S1-10 and S1-10 DUP at 2200 ppb and 2100 ppb, respectively. Agreement was excellent and within QC criteria.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

#### XII. System Performance

System performance was acceptable.



# XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was excellent.

1,1,2,2-Tetrachloroethane was rejected in Sample S1-10MS.

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

'----'

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3232

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2598

Level: (low/med) LOW Date Received: 5/ 8/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACk Dilution Factor: 12.50

# CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug	j/kg) UG/L		Q
!				;
1 74-87-3	Chloromethane	120.	: U	:
1 74-83-9	Bromomethane	120.	١U	;
	Vinyl Chloride	120.	١U	:
1 75-00-3	Chloroethane	120.	ŧυ	1
1 75-09-2	Methylene Chloride	62.	ΙU	1
67-64-1	Acetone	120.	١U	;
75-15-0	Carbon Disulfide	62.	: U	;
1 75-35-4	1,1-Dichloroethene	: 62.	: U	;
1 75-34-3	1,1-Dichloroethane	62.	; U	1
1 540-59-0	1,2-Dichloroethene (total)	62.	١U	;
1 67-66-3	Chloroform	62.	۱U	:
107-06-2	1,2-Dichloroethane	62.	: U	1
1 78-93-3	2-Butanone	120.	ΙU	;
: 71-55-6	1,1,1-Trichloroethane	62.	١U	;
: 56-23-5	Carbon Tetrachloride	62.	: U	;
108-05-4	Vinyl Acetate	120.	: U	;
1 75-27-4	Bromodichloromethane	1 62.	: U	:
: 78-87-5	1,2-Dichloropropane	62.	: U	;
:10061-01-5	cis-1,3-Dichloropropene	62.	: U	;
: 79-01-6	Trichloroethene	62.	ŀυ	;
124-48-1	Dibromochloromethane	62.	ŀυ	1
1 79-00-5	1,1,2-Trichloroethane	62.	٠u	;
: 71-43-2	Benzene	62.	١U	;
10061-02-6	Trans-1,3-Dichloropropene	62.	ΙU	;
: 75-15-1	Bromoform	62.	ΙU	;
108-10-1	4-Methvl-2-Pentanone	i 110.	: U	:
: 591-78-6	2-Hexanone	120.	¦U	;
127-18-4	Tetrachloroethene	1 2200.	;	;
1 79-34-5	1,1,2,2-Tetrachloroethane	62.	١U	1
108-88-3	Toluene	62.	ŀυ	+
108-90-7	Chlorobenzene	62.	ŀU	;
100-41-4	Ethylbenzene	62.	; U	;
100-42-5	Styrene	62.	:ប	:
1330-20-7	Xylene (total)	62.	: U	1
		<b></b>		!
				_

# TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.: 00022

Matrix: (soil/water) WATER

Lab Sample ID: 3232

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2598

Level: (low/med) LOW

Date Received: 5/8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACk

Dilution Factor: 12.50

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

: CAS NUMBER	: COMPOUND NAME	: RT	EST. CONC.	; ; Q ; !====:
1			!	,
1 2			!	::
3				!!
4			!	! ; !
6.				· ;
				:;
8				! !
9 10				
11.				
12.				;
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14 15				
16.				
17;		!		:
18		!		:
20	i			<u>;</u>
21				;
22.		!		;
23		!	!	
75				
26				
27		:		;
28		!	!	!
29. 30.		;		
		:		!

FORM I VOA-TIC

1/87 Rev.

EPA SAMPLE NO.

Sò 0 0 0 2 7

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3233

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2599

Level: (low/med) LOW Date Received: 5/ 8/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACK Dilution Factor: 12.50

#### CONCENTRATION UNITS:

74-87-3Chloromethane       120. !U         74-83-9Bromomethane       120. !U         75-01-4Vinyl Chloride       120. !U         75-00-3Chloroethane       120. !U         75-09-2Methylene Chloride       62. !U         67-64-1Acetone       120. !U         75-15-0Carbon Disulfide       62. !U         75-35-41,1-Dichloroethene       62. !U         75-34-31,1-Dichloroethane       62. !U         540-59-01,2-Dichloroethene (total)       62. !U         67-66-3Chloroform       62. !U	-
74-83-9Bromomethane       120.   U         75-01-4Vinyl Chloride       120.   U         75-00-3Chloroethane       120.   U         75-09-2Methylene Chloride       62.   U         67-64-1Acetone       120.   U         75-15-0Carbon Disulfide       62.   U         75-35-41,1-Dichloroethene       62.   U         75-34-31,1-Dichloroethane       62.   U         540-59-01,2-Dichloroethene (total)       62.   U         67-66-3Chloroform       62.   U	
74-83-9Bromomethane       120.   U         75-01-4Vinyl Chloride       120.   U         75-00-3Chloroethane       120.   U         75-09-2Methylene Chloride       62.   U         67-64-1Acetone       120.   U         75-15-0Carbon Disulfide       62.   U         75-35-41,1-Dichloroethene       62.   U         75-34-31,1-Dichloroethane       62.   U         540-59-01,2-Dichloroethene (total)       62.   U         67-66-3Chloroform       62.   U	; ; ;
75-01-4Vinyl Chloride	;
75-00-3Chloroethane	;
75-09-2Methylene Chloride   62.  U    67-64-1Acetone	;
75-15-0Carbon Disulfide   62.  U	1
75-15-0Carbon Disulfide   62.  U	1
75-34-31,1-Dichloroethane  62.  U   540-59-01,2-Dichloroethene (total)  62.  U   67-66-3Chloroform  62.  U	•
75-34-31,1-Dichloroethane  62.  U   540-59-01,2-Dichloroethene (total)  62.  U   67-66-3Chloroform  62.  U	:
: 67-66-3Chloroform: 62. :U	1
67-66-3Chloroform 62. U	;
	1
107-06-21.2-Dichloroethane 62. (U	:
78-93-32-Butanone  120. (U	:
71-55-61,1,1-Trichloroethane 62. U	:
56-23-5Carbon Tetrachloride	:
108-05-4Vinyl Acetate  120.  U	;
75-27-4Bromodichloromethane 62. U	;
1 78-87-51,2-Dichloropropane 62. IU	:
(10061-01-5cis-1,3-Dichloropropene	i a tre
1 79-01-6Trichloroethene 6274 1 %U	6113191
124-48-1Dibromochloromethane 62. (U	!
1 79-00-51,1,2-Trichloroethane 62. (U	1
1 71-43-2Benzene	1
110061-02-6Trans-1,3-Dichloropropene 1 62. (U	1
75-25-2Bromoform   62.  U	:
108-10-14-Methyl-2-Pentanone	1
591-78-62-Hexanone120. (U	:
127-18-4Tetrachloroethene	:
: 79-34-51,1,2,2-Tetrachloroethane : 62. :U	:
: 108-88-3Toluene: 62. (U	;
! 108-90-7Chlorobenzene   62.   U	1
1 100-41-4Ethylbenzene	;
100-42-5Styrene	;
1330-20-7Xylene (total)	;
·	

#### VULHILE URGANICS ANALISIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

Number TICs found: 0

S1-10DUP

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00028

Matrix: (SOI)/water) WATER Lab Sample ID: 3233

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2599

Level: (low/med) LOW Date Received: 5/ 8/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pac)/cap) PACk Dilution Factor: 12.50

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

COMPOUND NAME : RT CAS NUMBER : EST. CONC. : 7. \_\_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | 12.\_\_\_\_\_ \_\_\_\_\_| 17.\_\_\_\_|\_\_\_| 18.\_\_\_\_ 19.\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_\_ 27.\_\_\_\_\_ 28. \_\_\_\_\_\_ 29.\_\_\_\_\_|\_\_\_| 30.\_\_\_\_\_ \_\_\_\_\_

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

: S1-10TB : 0.003.3

Lab Name: PACE Contract:

ract: : OUU

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3235

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2600

Level: (low/med) LOW Date Received: 5/ 8/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACk Dilution Factor: 1.00

CONCENTRATION UNI
-------------------

CAS NO.	COMPOUND	(ug/L or ug	/kg/ UG/L	C	ב
			!		;
1 74-87-3	-Chloromethane		10.	: U	;
1 74-83-9	-Bromomethane		10.	÷۵	:
75-01-4	-Vinyl Chloride		10.	١U	;
; 75-00-3	-Chloroethane		10.	: U	+
1 75-09-2	-Methylene Chlorid	de	; 5.	: U	:
67-64-1	-Acetone		10.	!U	}
75-15-0	-Carbon Disulfide		5.	: U	;
1 75-35-4	-1,1-Dichloroether	ne	5.	١U	;
; 75-34-3	-1,1-Dichloroethar	ne	5.	: U	;
: 540-59-0	-1.2-Dichloroether	ne (total)	5.	:υ	;
67-66-3	-Chloroform		5.	: U	:
107-06-2	·1,2-Dichloroethar	ne	5.	:U	;
1 78-93-3	·2-Butanone	!	10.	:U	;
: 71-55-6	·1,1,1-Trichloroet	hane:	5.	: U	1
1 56-23-5	Carbon Tetrachlor	ide:	5.	١U	:
108-05-4	Vinyl Acetate	¦	10.	ŀυ	:
1 75-27-4	Bromodichlorometh	ane :	5.	١U	:
1 78-87-5	1,2-Dichloropropa	ne;	5.	ΙU	:
110061-01-5	cis-1,3-Dichlorop	ropene:	5.	: U	1
79-01-6	Trichloroethene	;	5.	١u	;
124-48-1	Dibromochlorometh	ane;	5.	١U	;
1 79-00-5	1,1,2-Trichloroet	hane	5.	١U	1
1 71-43-2	Benzene		5.	:U	:
110061-02-6	Benzene Trans-1,3-Dichlor	opropene:	5.	ΙU	; 1
1 75-25-2	Bromoform		5.	ΙU	;
1 108-10-1	4-Mellyl-1-Pentan	one :	10.	: ບ	` .
: 591-78-6	2-Hexanone		10.	:บ	:
127-18-4	Tetrachloroethene	;	5.	ΙU.	i
1 79-34-5	1,1,2,2-Tetrachlo	roethane ;	5.	: U	1
108-88-3	Toluene		5.	¦U	1
108-90-7	Chlorobenzene		5 <b>.</b>	: U	
100-41-4	Ethvlbenzene	:	5.	. U	
100-42-5	Styrene		5.	: U	
1330-20-7	Styrene Xylene (total)		5.	: U	i
<u> </u>				1	!

# ----- UNUMNICO MMMLIGIO DMIM DMEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

S1-10TB

SDG No.:

00034

Matrix: (soil/water) WATER

Lab Sample ID: 3235

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2600

Level: (low/med) LOW

Date Received: 5/8/91

% Moisture: not dec.100.

Date Analyzed: 5/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	: RT	EST. CONC.	; Q ;
1		!		;
5				
5				! ; ! ;
9				 
10	*			 
13.				
15				
17				
19;				
22				
23				;
25  26		;		
28		;		;
29				
!		!		:

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3239

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2601

Level: (low/med) LOW Date Received: 5/ 8/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Column: (pack/cap) PACK Dilution Factor: 5.00

# CONCENTRATION UNITS:

CAS NO.	COMPOUND			ug/Kg		(	Ω
				· · · · · · · · · · · · · · · · · · ·			;
74-87-3-	Chloromethane			;	50.		:
74-83-9-	Bromomethane				50.	. –	;
75-01-4-	Vinyl Chloride			;	50.		1
75-00-3-	Chloroethane			!	50.	:U	;
1 75-09-2-	Methylene Chlori	de		;	25.	١U	:
1 67-64-1-	Acetone			;	50.	١U	;
75-15-0-	Carbon Disulfide			;	25.	; U	;
1 75-35-4-	1,1-Dichloroethe	ne		!	25.	:U	:
1 75-34-3-	1,1-Dichloroetha	ne			25.	١U	I
	1,2-Dichloroethe				6.	¦ J	1
: 67-66-3-	Chloroform			;	25.	; U	:
107-06-2	1.2-0ichloroethai	ne		!	25.	: U	:
: 78-93-3-	2-Butanone			:	50.	ΙU	:
; /1-55-6	1,1,1-Trichloroe	thane		!	25.	: U	:
: 56-23-5	Carbon Tetrachlor	ride		1	25.	: U	:
108-05-4-	Vinyl Acetate			;	50.	١U	+
: 75-27-4	Bromodichloromet	ane		+	25.	٠u	i
; 78~87-5-·	1,2-Dichloropropa	ane		1	25.	:U	1
(10061-01-5	cis-1.3-Dichloro:	propene		1	25.	: U	1
79-01 <i>-</i> 6	Trichloroethene			1	23.	; J	;
124-48-1	Dibromochlorometh	nane		_ ;	25.	١U	;
79-00-5	1,1,2-Trichloroe	thane		:	25.	:U	;
71-43-2	Benzene			:	25.	:υ	
10061-02-6	Trans-1.3-Dichlor	roproper	ne -	<b>;</b>	25.	ΙÜ	1
75-25-2	Bromoform			;	. 25.	ΙŪ	•
108-10-1	4-Methv1-2-Pentar	ione		i	50.	ΙŪ	1
591-78 <b>-</b> 6	2-Hexanone			<sub>!</sub>	50.	i U	
127-18-4	Tetrachloroethene			;	1000.	1	
79-34-5	1,1,2,2-Tetrachlo	proethar		;	25.	; U	;
108-88-3	Toluene			;	25.	ΙŪ	
108-90-7	Chlorobenzene			:	25.	: U	i
100-41-4	Ethylbenzene			:	25.	: U	
100-42-5	Styrene			<u>;</u>	25.	: U	:
1330-20-7	Xylene (total)			;	25.	:U	:
1000 100 /	Ayrene ( total /			'		!	:
				'		- '	'

#### VULHITLE UKBANILS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

SDG No.: 00039 

Matrix: (soil/water) WATER Lab Sample ID: 3239

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2601

Level: (low/med) LOW Date Received: 5/8/91

% Moisture: not dec.100. Date Analyzed: 5/14/91

Dolumn: (pack/cap) PACK Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

1.
2. 3. 4. 5. 6. 7. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20.
4.         5.         6.         7.         8.         9.         10.         11.         12.         13.         14.         15.         16.         17.         18.         19.         20.
5.       6.         7.       8.         9.       9.         10.       9.         11.       9.         12.       9.         13.       9.         14.       9.         15.       9.         16.       9.         17.       9.         18.       9.         19.       9.         20.       9.
6.
7.
9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20.
10. 11. 12. 13. 14. 15. 16. 17. 18. 19.
11. 12. 13. 14. 15. 16. 17. 18. 19.
12. 13. 14. 15. 16. 17. 18. 19. 20.
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16. 17. 18. 19. 20.
17. 18. 19. 20.
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DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA
METHOD 524.2 ANALYSES

Samples Collected 5/7/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

All postive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. What that documentation is received, this data package will be re-evaluated.

Foaming of the samples occurred during analysis of all samples except the field blank and the trip blank.

Chain of custody forms were not signed by the sampler and do not show that the samples were relinquished by the sampler.

All positive sample results were quantitated incorrectly by the laboratory. Corrections were made by the validator, and corrected copy of the Forms I are included with this validation report.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Seven treatment system samples were collected and submitted to PACE, Inc. on May 7, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-10FB	3234	05/07/91
S2-8	3237	05/07/91
S3-8	3238	05/07/91
S5-5	3240	05/07/91
S6-10	3241	05/07/91
S6-10DUP	3242	05/07/91
S6-10TB	3243	05/07/91



# Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/16/91.

#### B. Continuing

Continuing calibration criteria were met on 5/19/91 (0:10), 5/19/91 (10:05), and 5/20/91.

# IV. Blanks

The trip blank, field blank, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-10. The percent recoveries for 1,1-dichloroethene and benzene were below QC criteria in the MS and the MSD. No positive results for those compounds were detected, so no data were qualified.



# VII. Field Duplicates

Samples S6-10 and S6-10DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

# IX. TCL Compound Identification

TCL compound identifications were acceptable.

# X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44



Compound	MDL (ug/L)
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The results reported for tetrachloroethene in Samples S2-8 (270 ug/L) and S3-8 (270 ug/L) were well beyond the calibration range of the instrument (25 ug/L). These results for tetrachloroethene were qualified as estimated. Samples S2-8 and S3-8 should not have been submitted for Method 524.2 analyses.

All reported results for Samples S2-8 and S3-8 were quantified incorrectly. Correct results are as follows:

Compound	Corrected Result (ug/L)
<pre>S2-8 cis-1,2-Dichloroethene 1,1,1-Trichloroethane Trichloroethene Tetrachloroethene</pre>	3.8 5.6 7.6 270
<pre>S3-8 cis-1,2-Dichloroethene 1,1,1-Trichloroethane Trichloroethene Tetrachloroethene</pre>	9.3 17 16 270

All other results and detection limits were acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

# XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.



Results for Samples S2-8 and S3-8 were quantified incorrectly by the laboratory. Corrected have been made to the Form I which is included with this validation report.

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PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0032348 05/07/91 05/08/91 <u>S1-10 FB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WJ EKD 191 ND ND ND ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND : ND ND ND ND ;
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND .
Ethyl benzene Xylene, total	ug/L uq/L	0.5 0.5	ND

Method Detection Limit Not detected at or above the MDL. MDL

ND

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0032372 05/07/91 05/08/91 <u>\$2</u> -8
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W EK 2/0/9/
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	4.1 3.8 J ND WJ 6.3 4.4 5.6J ND WJ ND WJ
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WA ND WA 8.3 S6, 7.6 J ND A ND A ND A
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND (L.) 300 270 J ND (L.) ND (L.) ND (L.) ND (L.)
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0032380 05/07/91 05/08/91 <u>S3-8</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND KJ EKS 191 ND ND ND ND ND ND ND ND ND ND ND ND ND N
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ا ON دیم ON ایم ON ایم ON ایم ON ایم ON ایم ON
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND L ND L 17 / L J ND L ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	<u>MDL</u>	95 0032402 05/07/91 05/08/91 <u>\$5-5</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US EXPORAL ND ND ND ND ND ND ND ND ND ND ND ND ND N
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0032410 05/07/91 05/08/91 <u>\$6-10</u>
ORGANIC ANALYSIS			.4.
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND :

MDL

Method Detection Limit
Not detected at or above the MDL. ND

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0032429 05/07/91 05/08/91 S6-10 Dup
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODI Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	FIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND (L) ND   ND   ND   ND   ND   ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810508501 Unifirst 95 0032437 PACE Sample Number: 05/07/91 Date Collected: 05/08/91 Date Received: S6-10 TB \_ Units MDL Parameter ORGANIC ANALYSIS VOLATILE ORGANICS BY 524.2 MODIFIED ND W. 0.5 Vinyl chloride ug/L 0.5 ug/L ND Chloroethane 0.5 ND Methylene chloride ug/L 0.5 ND 1,1-Dichloroethene ug/L 0.5 ND 1.1-Dichloroethane ug/L ND 0.5 trans-1,2-Dichloroethene ug/L ND ug/L 0.5 cis-1,2-Dichloroethene 0.5 ND Chloroform ug/L 0.5 ND 1,2-Dichloroethane ug/L ND 1,1,1-Trichloroethane 0.5 ug/L 0.5 ND Carbon tetrachloride ug/L 0.5 ND Bromodichloromethane ug/L ND 1,2-Dichloropropane ug/L 0.5 cis-1.3-Dichloropropene ug/L 0.5 ND Trichloroethene ua/1 0.5 ND

irichioroethene	UY/L	0.5	NU	1
Dibromochloromethane	ug/L	0.5	ND	
1,1,2-Trichloroethane	ug/L	0.5	ND	l
Benzene	ug/L	0.5	ND	
trans-1,3-Dichloropropene	ug/L	0.5	DИ	
Bromoform	ug/L	0.5	ND	
Tetrachloroethene	ug/L	0.5	ND	
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	
Toluene	ug/L	0.5	ND	
Chlorobenzene	ug/L	0.5	ND	
Ethyl benzene	ug/L	0.5	ND	
Xylene, total	ug/L	0.5	ND —	

MDL Method Detection Limit

ND Not detected at or above the MDL.

00059



# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

DRUM SAMPLING

INORGANIC ANALYSES DATA

Samples Collected 5/7/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

The reported copper results were considered valid.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Inorganic Data Validation

for

# Environmental Project Control, Inc.

# Samples Collected 5/7/91

### Case Narrative

This group contained two water samples. Both samples were analyzed for only copper.

Four other samples were listed on the cover page to account for the samples used for the matrix spike and duplicate that accompanied this data package. However, none of the documents (e.g., digestion log) to track these samples in the laboratory were included in the data package.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	<pre>Date of Collection</pre>
DRUM 1	3245	5/7/91
DRUM 2	3244	5/7/91



The areas reviewed during validation are listed below.

# CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
  - XII. Overall Assessment



#### Data Validation

# I. Holding Times

Analyses were conducted within acceptable holding times.

#### II. Calibration

Instrument calibration was satisfactory.

#### III. Blanks

All blanks were satisfactory.

# IV. ICP Interference Check Sample

ICS results were satisfactory.

#### v. Matrix Spike Sample Analysis

Matrix spike sample analysis was satisfactory although there is no reason to believe that the sample spiked was representative of the either Drum 1 or Drum 2.

# VI. Duplicate Sample Analysis

Duplicate sample analysis was satisfactory.

# VII. Laboratory Control Sample Analysis

LCS results were satisfactory.

# VIII. Furnace Atomic Absorption Analysis

No analyses in this data package were conducted by furnace AA.

# IX. ICP Serial Dilution Analysis

Serial dilution results were satisfactory although concentrations were not sufficiently high to be meaningful.



# X. Detection Limits

The copper IDL was less than the CRDL.

# XI. Sample Result Verification

Calculations were performed correctly.

# XII. Overall Assessment

The reported copper results were considered valid.

# 1 INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.
-----	--------	-----

th Name: PACE	_incorporat	ED	0 ( Contract: El	001	2	DRUM 2
						SDG No.:
atrix (soil/w	vater): WATE	R		Lab	Sampl	e ID: 3244.5
evel (low/med	l): LOW_	_		Dat	e Rece	eived: 05/08/91
Solids:		0				
Co	ncentration	Units (ug,	/L or mg/kg dry	y we:	ight):	UG/L_
	CAS No.	Analyte	Concentration	С	Q	м
	7429-90-5	7 11minum		- -		NR
	7440-36-0	Antimony_		- -		NR NR
	7440-38-0	Arsenic_		- -		NR
	7440-38-2			- -		NR
		Beryllium				NR
	7440-43-9		[ <del></del> [	- -		NR
	7440-70-2			- -		NR
	7440-47-3			-   -		NR
	7440-48-4	Cobalt		- -		NR
	7440-50-8	Copper	4.5_	וּטוֹ	_	P_
		Iron				NR
	7439-92-1	Lead				NR
	7439-95-4	Magnesium				NR
		Manganese				NR
	7439-97-6	Mercury				NR
		Nickel_				NR
		Potassium		_ _		NR
	7782-49-2	Selenium				NR
	7440-22-4	Silver_				NR
	7440-23-5	Sodium		_ _		NR
	7440-28-0			_ _	:	NR
	7440-62-2	Vanadium_		_ _		NR
	7440-66-6			_ _		NR
		Cyanide		- -		NR
lor Before:	COLORLESS	Clarit	y Before: CLEA	LR_		Texture:
lor After:	COLORLESS	Clarit	ty After: CLEA	AR_		Artifacts:
mments:						

# U.S. EPA - CLP

# . 1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

_ab Name: PAC	E_INCORPORAT	ED	Contract: E	PC	000 baum 1
ib Code:			SAS No.		SDG No.:
fatrix (soil/		<del></del>			ole ID: 3245.3
evel (low/me	ed): LOW_	<del></del>		Date Rec	eived: 05/08/91
° Solids:		0			
c	concentration	Units (ug,	/L or mg/kg dry	y weight)	: UG/L_
	CAS No.	Analyte Aluminum	Concentration	C Q	M NR
	7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-47-3 7440-48-4 7440-50-8 7439-89-6	Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Calcium_ Chromium_ Cobalt_ Copper_ Iron	6.0_		NR NR NR NR NR NR NR NR P_ NR
	7782-49-2 7440-22-4 7440-23-5	Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium			NR NR NR NR NR NR NR NR NR
	7440-62-2 7440-66-6	Vanadium_ Zinc Cyanide			NR NR NR
olor Before:	COLORLESS	Clarit	y Before: CLEA	.R_	Texture:
Color After:	COLORLESS	Clarit	y After: CLEA	R_	Artifacts:
omments:					



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/8/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Tetrachloroethene was the only target compound list (TCL) compound detected above the detection limit. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Six treatment system samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 8, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S4-9	3275	05/08/91
S1-11	3280	05/08/91
S1-11Dup	3281	05/08/91
S1-11TB	3283	05/08/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were analyzed within holding times.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met.

#### Bontinuing

Continuing calibration criteria were met with the exception of the % difference for 2-butanone (actual 38.9 and 34.9-criteria 25) and chloromethane (actual 32 and 34.9-criteria 25). Both calibrations were analyzed on May 15, 1991. The data were not affected.

#### IV. Blanks

No contamination was detected in the trip or method blanks.

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.



### VII. Field Duplicates

Tetrachloroethene was detected in the sample at 2400 ppb, the field duplicate at 1700 ppb, in the MS at 2200 ppb, and in the MSD at 2500 ppb (RSD 16). The data are acceptable.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

Target compounds were properly identified.

### X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data. Tetrachloroethene was reported in S4-9 at 1100 E ppb. This number can be used without reservation since it is not significantly outside of the calibration range.

#### XI. Tentatively Identified Compounds

No TICs were detected.

#### XII. System Performance

System performance was acceptable.

### XIII. Overall Assessment of Data for a Case

Data quality for this SDG was good.

EPA SAMPLE NO.

51 0 0 2 0

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3275

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2612

Level: (low/med) LOW Date Received: 5/ 9/91

% Moisture: not dec.100. Date Analyzed: 5/15/91

Column: (pack/cap) PACK Dilution Factor: 5.00

CAS NO.	COMPOUND		RATION UN r ug/Kg)		מ	·
!			:		;	:
74-87-3	Chloromethane		!	50.	មេ	i
74-83-9	Bromomethane		!	50.	¦ U	i
75-01-4	Vinyl Chloride		!	50.	! U	i
75-00-3	Chloroethane			50.	١U	
75-09-2	Methylene Chlo	rıde		25.	l U	
67-64-1	Acetone Carbon Disulfi		!	50.	l U	
75-15-0	Carbon Disulfi	de		25.	IU /	;
75-35-4	1.1-Dichloroet	hene	'	25.	:U	i
1 75-34-3	1.1-Dichloroet	hane	!	25.	; U	i
540-59-0	1,2-Dichloroet	hene (tota)	1)1	25.	١U	
67-66-3	Chloroform		!	· 25.	ŀυ	- 1
107-06-2	1.2-Dichloroet	hane	ľ	25.	: U	;
1 78-93-3	2-Butanone			50.	: U	-
71-55-6	1,1,1-Trichlor	pethane	!	15.	: J	·
56-23-5	Carbon Tetrach	loride		25.	: U	:
108-05-4	Vinyl Acetate		!	50.	١U	;
1 75-27-4	Bromodichlorom	ethane	;	25.	١U	;
	1,2-Dichloropro			25.	: U	i
110061-01-5	cis-1,3-Dichlo	ropropene _	;	25.	មេ	;
79-01-6	Trichloroethen		;	25.	; J	:
124-48-1	Dibromochlorome	ethane	!	25.	: U	;
1 79-00-5	1,1,2-Trichlore			25.	:U	;
71-43-2	Benzene		:	25.	:U	:
110061-02-6	Trans-1,3-Dich	loropropene	!	25.	١U	;
	Bromoform		:	25.	: U	;
108-10-1	4-Methy1-2-Pent	anone	!	50.	:U	;
591-78-6	2-Hexanone		;	50.	ر ۱۱	;
127-18-4	Tetrachloroethe	ene	!	1100.	; Z	;
	1,1,2,2-Tetrach			25.	:U	;
108-88-3	Toluene		:	25.	١U	:
108-90-7	Chlorobenzene		;	25.	:U	;
100-41-4	Ethylbenzene		!	25.	:U	1
100-42-5	Styrene		;	25.	:U	;
1330-20-7	Xylene (total)_		;	25.	:ប	;
 			!		-	_ <b>:</b>

# VOLATILE ORGANICS ANALYSIS DATA SHEET TATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: : 54-9

00021

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Lab Sample ID: 3275 Matrix: (Soil/water) WATER

Lab File ID: J2612 Sample wt/vol: 5. (q/mL) ML

Level: (low/med) LOW Date Received: 5/ 9/91

Date Analyzed: 5/15/91 % Moisture: not dec.100.

Dilution Factor: 5.00 Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

1	COMPOUND NAME		: : EST. CONC.	; ; ;
CAS NUMBER	COMPOUND NAME			1
				; =====
				!
				!
			!	<u> </u>
4			!	·
5				!
				: <b>-</b>
10;			 	
• •				! !
12;;				! :
15				
14				;
4 🖛				: ;
4 /-				
17.				;
20		1		
22		,	!	
23				'
24.				' <u>'</u>
25				!
26				!
27				
28		!		;
	i	!		!
30		;		
				;

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s1-dh028

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3280

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2625

Level: (low/med) LOW Date Received: 5/ 9/31

% Moisture: not dec.100. Date Analyzed: 5/15/91

Column: (pach/cap) PACK Dilution Factor: 20.00

		CONCEN	ITRA	ATION U	NITS:		
CAS NO.	COMPOUND	(ug/L	or	ug/Kg)	UG/L	α	)
				;			;
74-87-3	Chloromethane			1	200.	۱u	1
	Bromomethane				200.	: U	1
1 75-01-4	Vinyl Chloride				200.	١U	1
; 75-00-3	Chloroethane			}	200.	! U	;
: 75-09-2	Methylene Chlc	ride		1	100.	l U	;
: 67-64-1	Acetone			;	200.	:U	- !
: 75-15-0	Carbon Disulfi	de		;	100.	; U	Į.
	1,1-Dichloroet				100.	!U	;
: 75-34-3	1,1-Dichloroet	hane		;	100.	! U	ŀ
: 540-59-0	1,2-Dichloroet	hene (tot	ali	:	100.	١U	1
1 67-66-3	Chloroform			!	100.	: U	1
1 107-06-2	1.2-Dichloroet	hane		_ i	100.	١U	;
1 78-93-3	2-Butanone			;	200.	; U	;
1 71-55-6	1,1,1-Trichlor	oethane _		;	100.	: U	:
1 56-23-5	Carbon Tetrach	loride		!	100.	١U	;
108-05-4	Vinyl Acetate			;	200.	! U	;
1 75-27-4	Bromodichlorom	ethane		;	100.	١u	1
	1,2-Dichloropr				100.	:ប	1
110061-01-5	cis-1,3-Dichlo	ropropene		;	100.	: U	- !
1 79-01-6	Trichloroethen	e		;	100.	: U	;
	Dibromochlorom				100.	; U	;
1 79-00-5	1,1,2-Trichlor				100.	: U	:
		~			100.	(U)	:
	Trans-1,3-Dich	loroprope	ne	;	100.	: U	1
1 75-25-2	Bromoform			!	100.	: U	1
	4-Methy1-2-Pen				200.	: U	
591-78-6	2-Hexanone			:	200.	; U	
127-18-4	Tetrachloroeth	ene		;	2400.	1	:
1 79-34-5	1,1,2,2-Tetrac	hloroetha	ne	;	100.	; U	:
108-88-3	Toluene			;	100.	:00	;
	Chlorobenzene .				100.	: <b>n</b> 1	
	Ethylbenzene				100.	រប្រា	í
100-42-5	Styrene			;	100.	1 <b>u</b> J	;
1330-20-7	Xylene (total)			;	100.	; <b>U</b> J	1
				;		_	:

# VOLATILE ORGANICS ANALYSIS DATA SHEET TATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

:	S1 -11	,
,		

SDG NO.029

Lab Sample ID: 3280 Matrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2625

Level: (low/med) LOW Date Received: 5/ 9/91

% Moisture: not dec.100. Date Analyzed: 5/15/91

Column: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

		<del></del>	]	<del></del> ;
CAS NUMBER	COMPOUND NAME	: RT	EST. CONC.	Q
1		,	;	;;
2				!!
3			!	!!
5			'	' ' ' '
٤٠			!	!!
7! 8.				: ;
10				!!
11				
13;				
14	1			{ <u>}</u>
15				
17!				
18				
19				;
21		;		:
22.				!
24.		;		
25				;
26		!		
~g;		i		
-49				
30 .		!		
!		;	i	i

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FORM I VOA-TIC

EPA SAMPLE NO. ; S1-11DUP

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3281

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2617

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACk

Dilution Factor: 12.50

CONCENTRATION UNITS:

74-87-3	CAS NO.	COMPOUND (ug/L or ug	/kg: UG/L	٥	}
74-83-9Bromomethane   120.   U   75-01-4Vinyl Chloride   120.   U   75-00-3Chloroethane   120.   U   75-09-2Methylene Chloride   62.   U   67-64-1	!		!		;
75-01-4	1 74-87-3	Chloromethane			}
75-00-3Chloroethane	1 74-83-9	Bromomethane		. –	. ;
75-09-2Methylene Chloride	1 75-01-4	Vinyl Chloride	120.	. –	;
120	1 75-00-3	Chloroethane		-	;
75-15-0Carbon Disulfide	1 75-09-2	Methylene Chloride	1 62.	: U	;
75-15-0Carbon Disulfide	1 67-64-1	Acetone	120.	. –	1
75-35-41,1-Dichloroethene	1 75-15-0	Carbon Disulfide	i 6	١U	;
75-34-31,1-Dichloroethane	1 75-35-4	1.1-Dichloroethene	1 62.	: U	:
540-59-01,2-Dichloroethene (total)   62.   U   67-66-3Chloroform   62.   U   107-06-21,2-Dichloroethane   120.   U   78-93-32-Butanone   120.   U   56-23-5Carbon Tetrachloride   62.   U   108-05-4Vinyl Acetate   120.   U   75-27-4Bromodichloromethane   62.   U   10061-01-5cis-1,3-Dichloropropene   62.   U   179-01-6Trichloroethene   62.   U   179-00-51,2-Trichloroethane   62.   U   179-00-51,3-Dichloropropene   62.   U   179-01-6Trains-1,3-Dichloropropene   62.   U   179-01-6Trains-1,3-Dichloropropene   62.   U   179-01-6Trains-1,3-Dichloropropene   62.   U   10061-02-6Trains-1,3-Dichloropropene   62.   U   10061-02-6Trains-1,3-Dichloropropene   62.   U   108-10-14-Methyl-2-Pentanone   120.   U   109-10-14-Methyl-2-Pentanone   120.   U   179-34-51,1,2,2-Tetrachloroethane   62.   U   108-88-3Toluene   62.   U   108-90-7	1 75-34-3	1.1-Dichloroethane	62.	ŧυ	
107-06-3Chloroform	: 540-59-0	1,2-Dichloroethene (total)	62.	١U	;
107-06-21,2-Dichloroethane	1 67-66-3	Chloroform	1 62.		;
78-93-32-Butanone	107-06-2	1,2-Dichloroethane	62.		;
71-55-61,1,1-Trichloroethane   62.   U   56-23-5Carbon Tetrachloride   62.   U   108-05-4Vinyl Acetate   120.   U   75-27-4Bromodichloromethane   62.   U   78-87-51,2-Dichloropropane   62.   U   10061-01-5Trichloroethane   62.   U   79-01-6Trichloroethane   62.   U   124-48-1Dibromochloromethane   62.   U   79-00-51,1,2-Trichloroethane   62.   U   71-43-2Benzene   62.   U   10061-02-6Trans-1,3-Dichloropropene   62.   U   75-25-2Bromoferm   62.   U   127-18-4				: U	!
108-05-4Vinyl Acetate	1 71-55-6	1.1.1-Trichloroethane	62.	;U	;
108-05-4Vinyl Acetate	: 56-23-5	Carbon Tetrachloride	62.	; U	1
75-27-4Bromodichloromethane				:U	;
10061-01-5cis-1,3-Dichloropropene   62.   U   79-01-6Trichloroethene   62.   U   124-48-1Dibromochloromethane   62.   U   79-00-51,1,2-Trichloroethane   62.   U   71-43-2Benzene   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   62.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   U   63.   U   63.   U   63.   U   63.   U   63.   U   63.   U   U   63.   U   C   U   C   U   C   U   C   U   C   U   C   U   C   U   C   U   U				:U	!
10061-01-5cis-1,3-Dichloropropene				; U	1
79-01-6Trichloroethene   62.   U   124-48-1Dibromochloromethane   62.   U   79-00-51.1,2-Trichloroethane   62.   U   124-48-1Benzene   62.   U   124-43-2Benzene   62.   U   125-25-2Bromoferm   62.   U   125-25-2Bromoferm   62.   U   127-18-4Tetrachloroethene   120.   U   127-18-4Tetrachloroethene   1700.   U   127-18-4Tetrachloroethene   1700.   U   128-88-3Toluene   62.   U   128-90-7Chlorobenzene   62.   U   128-90-7Chlorobenzene   62.   U   128-90-7	110061-01-5	cis-1.3-Dichloropropene	: 62.	ŀU	1
79-00-51.1,2-Trichloroethane	1 79-01-6	Trichloroethene	: 62.	١U	:
79-00-51.1,2-Trichloroethane	1 124-48-1	Dibromochloromethane	62.	; U	;
10061-02-6Trans-1,3-Dichloropropene   62.   U   75-25-2Bromoferm   62.   U   108-10-14-Methyl-2-Pentanone   120.   U   127-18-6Tetrachloroethene   1700.   U   127-18-4Tetrachloroethene   1700.   U   108-88-3Toluene   62.   U   108-90-7Chlorobenzene   62.   U   100-41-4Ethylbenzene   62.   U   100-42-5Styrene   62.   U   100-42-5Styrene   62.   U   100-42-5	1 79-00-5	1.1.2-Trichloroethane	62.	١U	;
10061-02-6Trans-1,3-Dichloropropene   62.   U   75-25-2Bromoferm   62.   U   108-10-14-Methyl-2-Pentanone   120.   U   127-18-6Tetrachloroethene   1700.   U   127-18-4Tetrachloroethene   1700.   U   108-88-3Toluene   62.   U   108-90-7Chlorobenzene   62.   U   100-41-4Ethylbenzene   62.   U   100-42-5Styrene   62.   U   100-42-5Styrene   62.   U   100-42-5	1 71-43-2	Benzene	62.	: บ	:
75-25-2Bromoferm	10061-02-6	Trans-1,3-Dichloropropene	1 62.	; U	;
108-10-14-Methyl-2-Pentanone	1 75-25-2	Bromoform	62.	: U	:
127-18-4Tetrachloroethene	1 108-10-1	4-Methyl-2-Pentanone	120.	: U	;
127-18-4Tetrachloroethene	591-78-6	2-Hexanone	120.	! U	!
108-88-3	1 127-18-4	Tetrachloroethene	1700.	;	;
108-88-3Toluene	79-34-5	1,1,2,2-Tetrachloroethane	62.	: U	;
108-90-7Chlorobenzene			62.		1
100-41-4Ethylbenzene  62.  U   62.  U   62.  U   62.  U   62.  U   63.  U   64.  U   65.  U   65.  U   65.  U   65.  U   65.  U   65.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.  U   66.				: U	;
: 100-42-5Styrene: 62. :U			62.		;
1330-20-7Xylene (total) 62. U			62.	: U	;
	1330-20-7	Xvlene (total)	62.	¦ U	!
	<b>,</b>			_	:

# VOLATILE ORGANICS ANALYSIS DATA SHEET TATIVELY IDENTIFIED COMPOUNDS

Contract: Lab Name: PACE

; S1-11DUP

SDG No.:00035 

Matrix: (soil/water) WATER

Lab Sample ID: 3281

Sample wt/vol: 5. (q/mL) ML

Lab File ID: J2617

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pach/cap) PACk

Dilution Factor: 12.50

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

				 ! !
CAS NUMBER	COMPOUND NAME	: RT	EST. CONC.	. a :
=====================================		:=======		=====
1		!		! ;
1 2.		,		
1 3.		1	!	
		1		;
5				!
ε		!		
7		!		1
: B:		!		:
: 9;				:
10;		!	<sup> </sup>	!
11;				!
				!
14				
15				
16				!
17				!
18;				<u>i</u>
19				
20				
21				!
22				<u>:</u>
23.		!		i
24				
25				i
26				i
27				i
28		!		!
29		!		
-(1)				!
			i	

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EPA SAMPLE NO. S1-11TB

Contract: Lab Name: PACE

SDG No.: 00040

Matrix: (soil/water) WATER

Lab Sample ID: 3283

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2611

Level: (low/med) LOW

Date Received: 5/ 9/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pac)/cap) PACk

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS	NO.	COMPOUND	(ug/L or	ug/k.g)	UG/L		Q
;					4.5	 . U	;
		Chloromethane			10.		'
		Bromomethane			10.		
		Vinyl Chloride			10.	10	
		Chloroethane			10.	! U	i
1 75	5-09-2	Methylene Chloric	le	!	5.	! U	i
1 67	'-64-1	Acetone		'	10.	١U	i
1 75	-15-0	Carbon Disulfide_		~ [	5.	; U	į
		1,1-Dichloroether			5.	: U	
		1,1-Dıchloroethar			5.	١U	3
		1.2-Dichloroether			5.	; ນ	;
1 67	-66-3	Chloroform		;	5.	١U	1
107	-06-2	1.2-Dichloroethar	e	;	5.	١U	;
; 78	-93-3	2-Butanone		;	10.	١U	;
1 71	-55-6	1,1,1-Trichloroet	hane	;	5.	: U	:
		Carbon Tetrachlor			5.	: U	;
: 108	-05-4	Vinyl Acetate			10.	: U	;
: 75	-27-4	Bromodichlorometh	ane		5.	١U	;
		1,2-Dichloropropa			5.	; U	;
		cis-1,3-Dichlorop			5.	:U	;
: 79	-01-6	Trichloroethene		;	5.	١U	:
1 124	-48-1	Dibromochlorometh	ane	1	5.	ម	- 1
		1,1,2-Trichloroet			5.	:U	;
71	-43-2				5.	: U	<b>!</b>
		Trans-1,3-Dichlor	opropene	<u>!</u>	5.	١U	;
1 75	-25-2	Bromoform		:	5.	: U	:
108	-10-1	4-Methyl-2-Pentan	one		10.	١U	:
		2-Hexanone			10.	:U	:
127	-18-4	Tetrachloroethene		!	5.	រប	1
79.	-34-5	1,1,2,2-Tetrachlo	roethane	<del></del> ;	5.	įυ	1
108	-88-3	Toluene	, oe mane	<u>;</u>	5.	ίŪ	;
100	-20-7	Chlorobenzene		;	5.	ίŪ	}
		Ethylbenzene			5.	10	
		Styrene			5.	: U	1
1 1220	- マム・フィー	Xylene (total)		:	5.	: U	
, 1990.	-20-/	xylene (total/		;	<b>-</b>	:	•
'				'		-	

# VOLATILE ORGANICS ANALYSIS DATA SHEET T' ATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

Number TICs found: 0

S1-11TB

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00041

Matrix: (soil/water) WATER Lab Sample ID: 3283

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2611

.evel: (low/med) LOW Date Received: 5/ 9/91

% Moisture: not dec.100. Date Analyzed: 5/15/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

CAS NUMBER	: COMPOUND NAME	: : RT	: EST. CONC.	; ; 0
;======================================	=====================================	:=======	=======================================	;=====
1	 		 	!
2		!	 	!
, 3	 	!		1
4	! !	!		:
5		!		!!
. 6		;		1:
7				1:
8:		1		11
9		!		11
10;		;		;;
				;;
<b>1</b> 1 5	•			;
1.3				:
14				
15				
16				
17				
18.	**************************************			
19		;		;;
20	**************************************	'		¦;
, ,,				;;
20				¦
23		:		::
! ^d :		i		
OE;	<u> </u>	!		::
26				
27				
28				
29		!		
30.		!		
!		!		!

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DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA
METHOD 524.2 ANALYSES

Samples Collected 5/8/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

All postive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds and the internal standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Positive sample results for Sample S5-6 were quantified incorrectly by the laboratory. Corrections were made by the validator, and a corrected copy of the Forms I is included with this validation report.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Five treatment system samples were collected and submitted to PACE, Inc. on May 8, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S5-6	3276	05/08/91
S6-11	3277	05/08/91
S6-11DUP	3278	05/08/91
S6-11TB	3279	05/08/91
S1-11FB	3282	05/08/91

Samples S2-9 and S3-9 were also submitted with the above samples for Method 524.2 analyses. Because of the high levels of tetrachloroethene in S2-9 and S3-9, these samples were analyzed pursuant to CLP methodology for volatile organic compounds.



## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
    - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples except Sample S6-11 were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Sample S6-11 was analyzed within the 7-day holding time. Detection limits for aromatic compounds were qualified as estimated for all samples except S6-11.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/11/91 and 5/16/91.

#### B. Continuing

Continuing calibration criteria were met on 5/19/91 and 5/20/91.

# IV. Blanks

The trip blank, field blank, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-11. The relative percent differences for



1,1-dichloroethene and benzene were above QC criteria. No positive results for those compounds were detected, so no data were qualified.

# VII. Field Duplicates

Samples S6-11 and S6-11DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

The compound 1,1-dichloroethene was reported in Sample S5-6. The spectrum provided does not match that of 1,1-dichloroethene. This compound was rejected from Sample S5-6.

All other TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42



Compound	MDL (ug/L)
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for tetrachloroethene in Sample S5-6 (62 ug/L) was beyond the calibration range of the instrument (25 ug/L). This result was qualified as estimated.

All reported results for Sample S5-6 were quantified incorrectly. Correct results are as follows:

Compound	Corrected Result (ug/L)
1,1-Dichloroethane	2.3
trans-1,2-Dichloroethene	0.38
cis-1,2-Dichloroethene	4.6
1,1,1-Trichloroethane	25
Trichloroethene	9.3
Tetrachloroethene	62

The result for trans-1,2-dichloroethene (0.38 ug/L) is below the PQL study-determined MDL. This result was reported as "ND."

All other results and detection limits were acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

# XII. System Performance

System performance was acceptable.



## XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Results for Sample S5-6 were quantified incorrectly by the laboratory. Corrections have been made to the Form I which is included with this validation report.

Unifirst	PACE Project	Number:	810509500	
PACE Sample Number: Date Collected: Date Received: Parameter	·	<u>Units</u>	MDL	95 0032763 05/08/91 05/09/91 <u>\$5-6</u>
ORGANIC ANALYSIS	•			
VOLATILE ORGANICS BY 524.2 Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	MODIFIED	ug/L ug/L ug/L ug/L ug/L	0.5 -0.5 -0.5 -0.5 -0.5	ND (L) (L) (A) (A) ND (A) (B) (A) (B) (A) (B) (B) (B) (B) (B) (B) (B) (B) (B) (B
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5 0.5	5.0 4.6. ND (4) - ND (2) - 27 25 ND (4) ND ()
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene		ug/L ug/L ug/L ug/L ug/L	0.5 - 0.5 0.5	ND ND ND ND ND ND ND
Ethyl benzene		ug/L ug/L	0.5	ND
MDL Method Detection ND Not detected at or (J) Less than the MDL	Limit _ r above the MD	 DL	·	

Unifirst

PACE Project Number: 810509500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0032771 05/08/91 05/09/91 <u>S6-11</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIF Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	TED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND WA TANKI
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL. PACE Project Number: 810509500

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0032780 05/08/91 05/09/91 S6-11 Dup
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W 2 2 1/6/9/
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND - ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Project Number: 810509500

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0032798 05/08/91 05/09/91 S6-11 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W 'L' A W A A A A A A A A A A A A A A A A A
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L	0.5	ND
	ug/L	0.5	ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L	0.5	ND
	ug/L	0.5	ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L	0.5	ND
	ug/L	0.5	ND
Ethyl benzene	ug/L	0.5	ND ND
Xylene, total	ug/L	0.5	

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810509500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0032828 05/08/91 05/09/91 <u>S1-11 FB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W J REPORT
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND L

MDL Method Detection Limit
ND Not detected at or above the MDL.



## DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
INORGANIC ANALYSES DATA

Samples Collected 5/8/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

Metals analytical data presented for this sample delivery group were good. All unqualified positive sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting Based on the supporting documentation, qualifier documentation. codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Inorganic Data Validation

for

## Environmental Project Control, Inc.

## Samples Collected 5/8/91

## Case Narrative

This group contained three water samples including one field blank to be analyzed for metals.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
S1-11	3280	05/08/91
S1-11FB	3282	05/08/91
S6-11	3277	05/08/91

The areas reviewed during validation are listed below.



## CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
  - XII. Other QC
- XIII. Overall Assessment



#### Data Validation

## I. Holding Times

All metals analyses were conducted within acceptable holding times.

#### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected in any sample (including the matrix spike), data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within + 20% of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for chromium and silver were estimated.

### III.Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

Lead was detected in the preparation blank at 1.0 ppb.

Continuing calibration blank for manganese (2.0 ppb) was greater than the IDL. No data were affected.

The field blank contained iron (140 ppb), lead (1.0 ppb), and zinc (19 ppb).

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Lead results were qualified as less than the reported values.

#### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.



## V. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except for barium (8.5% recovery) and thallium (70.8% recovery). Thallium detection limits were estimated (UJ). Positive barium results were estimated (J). Detection limits were rejected (R).

## VI. Duplicate Sample Analysis

Duplicate analyses were satisfactory.

## VII. Laboratory Control Sample Analyses

Laboratory control sample results were satisfactory.

### VIII. Furnace Atomic Absorption Analysis

Duplicate injections were performed for all samples and agreed within  $\pm 20$ %.

The method of standard additions was not required.

## IX. ICP Serial Dilution Analysis

Serial dilutions were conducted on S1-11. All results met the validation criteria of 15%.

### X. Detection Limits

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

## XI. Sample Result Verification

Sample results were acceptable as reported.

### XII. Other QC

Samples were not analyzed for total and dissolved metals. Therefore, no additional QC was available.



#### XIII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. Positive results and detection limits for chromium and silver were estimated.

Lead was detected in the preparation blank at 1.0 ppb.

Continuing calibration blank for manganese (2.0 ppb) was greater than the IDL. No data were affected.

The field blank contained iron, lead, and zinc. Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value. Lead results were qualified as less than the reported value in Sample S1-11.

Matrix spike analyses were satisfactory except for barium (8.5% recovery) and thallium (70.8% recovery). Thallium detection limits were estimated (UJ). Positive barium results were estimated (J). Detection limits were rejected.

## U.S. EPA - CLP

INORGANIC ANALYSES DATA SHEET 0 1 6

ErA	SAMPLE	NO.

Tab Code: Case No.: SAS No.: SDG No.: S1-11  atrix (soil/water): WATER	ab Name:	PACE_INCORPORAT	ED	Contract: E	PC	S1-11
Cas No.		_				SDG No.: S1-11_
Concentration Units (ug/L or mg/kg dry weight): UG/L    CAS No.	atrix (se	oil/water): WATE	ER		Lab Sampl	e ID: 3280.1
CAS No. Analyte Concentration C Q M    7429-90-5	evel (lo	w/med): LOW_			Date Rece	ived: 05/09/91
CAS No.  Analyte Concentration C Q M  7429-90-5 7440-36-0 7440-38-2 7440-39-3 Barium 16.0 B N 2 P 7440-41-7 7440-43-9 Cadmium 3.0 U P 7440-70-2 Calcium 86200 P 7440-48-4 7440-50-8 Copper 6.0 B P 7439-95-4 7439-95-4 7439-95-4 7439-95-4 7440-02-0 7440-02-0 7440-02-0 7440-02-0 7440-02-0 7440-02-0 7440-22-4 7440-22-4 7440-22-5 7440-22-5 7440-22-6 7440-22-6 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7440-22-7 7	Solids:		_0			
T429-90-5		Concentration	Units (ug	/L or mg/kg dry	y weight):	UG/L_
T440-36-0	_	CAS No.	Analyte	Concentration	C Q	M M
T440-36-0		7429-90-5	Aluminum	195	<sub>17</sub>	<del>-</del> 1 118/9
T440-38-2		ì			[1]	F-1 1711
T440-39-3				· — — — —		
T440-41-7		· ·				
7440-70-2						 P_
7440-70-2					U	p
T440-47-3		l l	i —			
7440-48-4						<del></del> 1
7440-50-8				6.4	<u>                                   </u>	
Tron					B	P-
7439-92-1					<u> </u>	P
7439-95-4   Magnesium		1				
7439-96-5 7439-97-6 Mercury 0.20 U CV 7440-02-0 Nickel 8.6 U P 7482-49-2 Selenium 0.50 U F 7440-22-4 Silver 8.1 U P 7440-23-5 Sodium 86700 P 7440-62-2 Vanadium 5.0 B 7440-66-6 Cyanide NR  Color Before: COLORLESS Clarity Before: CLEAR Artifacts:		1			-	p-
7439-97-6						
7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6 Cyanide    Olor Before: COLORLESS   Clarity Before: CLEAR   Artifacts:		•				
7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6 Cyanide    Colorless   Clarity   Before: CLEAR   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear   Clear						
7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6 7440-66-6 Cyanide    Color Before: Colorless   Clarity Before: CLEAR   Artifacts:			·	\ <del></del>	B	P
7440-22-4   Silver			D.			
7440-28-0 7440-62-2 7440-66-6 Zinc Cyanide Cyanide  Clarity Before: CLEAR  Artifacts:						
7440-28-0 7440-62-2 7440-66-6 Zinc Cyanide Cyanide  Clarity Before: CLEAR  Texture:  lor After: COLORLESS  Clarity After: CLEAR  Artifacts:						P
7440-62-2 7440-66-6 Zinc Cyanide Cyanide Cyanide  lor After: COLORLESS Clarity Before: CLEAR Artifacts:					LW- U	F <sup>-</sup>
7440-66-6 Zinc 122 PNR  Cyanide NR  clor Before: COLORLESS Clarity Before: CLEAR Texture:  lor After: COLORLESS Clarity After: CLEAR Artifacts:		<b>1</b>			8	P
olor Before: COLORLESS Clarity Before: CLEAR_ Texture: lor After: COLORLESS Clarity After: CLEAR_ Artifacts:						P
olor Before: COLORLESS Clarity Before: CLEAR_ Texture: lor After: COLORLESS Clarity After: CLEAR_ Artifacts:		1.100			-  ;	NR
lor After: COLORLESS Clarity After: CLEAR_ Artifacts:						
<del>-</del>	olor Befo	ore: COLORLESS	Clari	ty Before: CLEA	AR_ :	Texture:
omments:	lor Afte	er: COLORLESS	Clari	ty After: CLE	AR_ Z	Artifacts:
	omments:					

## U.S. EPA - CLP

# INORGANIC ANALYSES DATA SHEET 7

EFA	SAMPLE	NO.

ib Name: PACE	: TNCORPORAT	ED	Contract: El	PC	S1-11FB
					SDG No.: S1-11_
trix (soil/w					e ID: 3282.8
evel (low/med	l): LOW_	_		Date Rece	ived: 05/09/91
Solids:		0			
Co	ncentration	Units (ug	/L or mg/kg dry	y weight):	UG/L_
	CAS No.	Analyte	Concentration	C Q	M 718191
	7429-90-5	Aluminum	195	<u></u>	P 11.
	7440-36-0	Antimony_	0.80		F
	7440-38-2	Arsenic	1.0	ט	F
	7440-39-3	Barium		U R	F F P
	7440-41-7	Beryllium		ט	P
	7440-43-9	Cadmium	3.0		P_
	7440-70-2	Calcium	448		P_
	7440-47-3	Chromium	9.5		p
	7440-48-4	Cobalt	6.4	U	P
	7440-50-8	Copper	4.5	U	P_
	7439-89-6	Iron	140		P_
	7439-92-1	Lead	1.0		F
	7439-95-4	Magnesium	! —————— — — !		P
	7439-96-5	Manganese	I ———— — — I		P_
	7439-97-6	Mercury	I ————— — — I		CV
·	7440-02-0	Nickel			P_
	7440-09-7	Potassium		וו	P
	7782-49-2	Selenium	1 ————— )		F
	7440-22-4	Silver			P
	7440-23-5	Sodium			P
	7440-28-0	Thallium			F_
	7440-62-2	Vanadium			<u>6</u> -1
	7440-66-6	Zinc	19.0	#!i	P
	1,440 00 0	Cyanide_			NR
or Before:	COLORLESS	Clarit	ty Before: CLEA	LR_ 1	Texture:
o'or After:	COLORLESS	Clarit	ty After: CLEA	LR_ 1	Artifacts:
mments:					
			<del></del>		<del></del>

## U.S. EPA - CLP

INORGANIC ANALYSES DATA SHEET 00015 A SAMPLE NO.

		INORGANIC A	ANALYSES DATA	SHI	EEL	`. <u> </u>	
h Name: PACI	TNCORPORAT	ED	Contract: E	PC			S6-11
	_					- CD	
p code:	Ca	se No.:	SAS No.	• -		SD	3 NO.: 21-11_
trix (soil/w	water): WATE	R		Lá	ab Samp	le I	D: 3277.1
vel (low/med	i): LOW_	_		Da	ate Rec	eive	d: 05/09/91
solids:	-	0			,		
Co	oncentration	Units (ug,	/L or mg/kg dr	y v	weight)	: UG,	/L_
	CAS No.	Analyte	Concentration	С	Q	M	Par 18191
	7429-90-5	Aluminum	195	֖֖֪֪֓֞֞֞֞֓֓֓֞֞֞֡		P	' 11'
		Antimony	0.80			F	•
		Arsenic	1.0	Ū	-W	F_	
	7440-39-3	Barium	19.0		川。	P-	
	7440-41-7	Beryllium		Ū		P_ P_	
		Cadmium	3.0	Ū		P_	
	7440-70-2	Calcium	88900			P	
	7440-47-3	Chromium	9.5	ប៊	1	P_	
	7440-48-4-			υ		P-	
	7440-50-8	Copper		ט		P_ P_	
	7439-89-6	Iron	97.7	Ū		$ \bar{p}^- $	
	7439-92-1	Lead		U	-#-	P_ F_ P_	•
	7439-95-4	Magnesium	10500			P	
	7439-96-5	Manganese	5.0	哥		P	
	7439-97-6	Mercury	0.20	U		c⊽	
	7440-02-0	Nickel -	8.6	U		P	
		Potassium		В		P	
	7782-49-2	Selenium	0.50	U		F	
	7440-22-4	Silver	8.1	ט	7	F_ P_ P_	
	7440-23-5	Sodium	89700			P <sup>-</sup>	
	7440-28-0	Thallium	0.70	Ū	CKW	F_	
	7440-62-2	Vanadium	4.2	ט		P_	
		Zinc	149	- {		P	
		Cyanide		-		P_ NR	
		-J					
						. — .	
or Before:	COLORLESS	Clarit	ty Before: CLE	\R_	-	Text	ture:
or After:	COLORLESS	Clarit	ty After: CLEA	AR_	-	Arti	ifacts:
ments:							
· •							
	· · · · · · · · · · · · · · · · · · ·						



## DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

VOLATILES ANALYSES DATA

Samples Collected 05/09/91

Chemical Analyses Performed By
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Tetrachloroethene is the only valid target compound detected. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Data Validation for Environmental Project Control, Inc.

Samples Collected May 09, 1991

Volatiles Analyses Data

#### Case Narrative

Four treatment system samples were collected May 9, 1991 and submitted to Pace, Inc. May 10, 1991. The laboratory was requested to perform purgeable volatile target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C}$   $\pm$   $2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

Tetrachloroethene is the only valid target compound detected. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3334	S1-12	05/09/91
3335	S1-12DUP	05/09/91
3337	S1-12TB	05/09/91
3341	S4-10	05/09/91

The areas reviewed during validation are listed below.



#### ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment of Data for a Case



#### DATA VALIDATION

## I. Sample Holding Times

All samples were analyzed within holding time.

#### II. Instrument Performance

Inst. J met bromofluorobenzene (BFB) ion abundance criteria on 04/24/91 1158, 05/12/91 2123, 05/14/91 2242, and 05/15/91 1248.

#### III. Calibration

The area for some internal standards and target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. No internal standard or surrogate peaks were manually integrated; data do not appear to be affected.

## 1) <u>Initial Calibration 04/24/91 Inst J</u>

The associated samples are S1-12, S1-12DUP, S1-12MS, S1-12MSD, S1-12TB, and S4-10.

Carbon tetrachloride failed to meet the 0.10 response factor criteria established for this project. This compound was not detected but the non-detects in the associated samples have been rejected.

Response factors and percent relative standard deviation (%RSD) for trans-1,3-dichloropropene cannot be calculated from the quantitation reports. This compound was not detected but the non-detects in the associated samples have been qualified as estimates.

## Continuing Calibration 05/12/91 2323 Inst. J

The associated sample is S1-12.

Carbon tetrachloride failed to meet the 0.10 relative response factor criteria established for the project. This non-detect in the associated sample was previously rejected.

The following compounds failed to meet the 25% difference (D) criteria:



2-butanone (26%) trans 1,3-dichloropropene (72%)

These compounds were not detected but the non-detects for trans 1,3-dichloropropene were qualified as estimates. No other data were qualified.

## Continuing Calibration 05/15/91 0033 Inst. J

The associated sample is S1-12TB.

2-Butanone and carbon tetrachloride failed to meet the 0.10 minimum RRF criteria. These compounds were not detected but the non-detects have been rejected in the associated sample.

The following compounds failed to meet the 25% difference criteria:

chloromethane (32%)
2-butanone (39%)
trans 1,3-dichloropropene (76%)

These compounds were not detected but the non-detect for trans-1,3-dichloropropene in the associated sample has been qualified as an estimate.

## Continuing Calibration 05/15/91 1332 Inst. J

The associated samples are S1-12MS, S1-12MSD, S1-12DUP and S4-10.

2-Butanone and carbon tetrachloride failed to meet the 0.10 minimum RRF criteria. These compounds were not detected but the non-detects in the associated samples were rejected.

The following compounds did not meet the 25% difference criteria:

chloromethane (34%)
2-butanone (35%)
trans 1,3-dichloropropene (76%)

These compounds were not detected but the non-detects for trans 1,3-dichloropropene were qualified as estimates.

## IV. Blanks

Chloroform, 1,1,1-trichloroethane, 4-methyl-2-pentanone, 1,1,2,2-tetrachloroethane and toluene were detected in VBLK01. These compounds were not detected in the associated samples and no data have been qualified.

No target compounds were detected in VBLK02, VBLK03 or S1-12TB.



## V. Surrogate Recovery

All surrogate recoveries were within control limits.

## VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike recoveries are within the established limits.

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits.

## VII. Field Quality Control Samples

S1-12DUP is a field duplicate of S1-12. Tetrachloroethene was detected at 2200 ppb in the sample and 2700 ppb in the field duplicate. These values met relative percent difference criteria. Acetone was detected in the original sample at 94 ppb but was not detected in the field duplicate. This value was rejected due to failure to confirm. No other valid target compounds were detected in either sample.

#### VIII. Internal Standards Performance

All retention times (RT) and internal standard (IS) areas are acceptable.

## IX. TCL Compound Identification

Compound identifications are acceptable.

## X. Compound Quantitation and Reported Detection Limits

Results and detection limit quantitations are acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were detected.



## XII. System Performance

System performance is acceptable.

## XIII. Overall Assessment of Data for a Case

Tetrachloroethene is the only valid target compound detected. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

S1-12

Lab Name: PACE

Contract:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3334.4

ample wt/vol: 5. (g/mL) ML

Lab File ID: J2557

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/13/91

Column: (pack/cap) FACK

Dilution Factor: 20.00

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

0

CAS NO.	COMPOUND (dg/h of dg	- -	¥
74-87-3	Chloromethane	200.	ט
74-83-9	Bromomethane	200.	Ū.
75-01-4	Vinyl Chloride	200.	U
75-00-3	Chloroethane	200.	ט
75-09-2	Methylene Chloride	100.	ĺΰ
67-64-1	Acetone	94.	JE
	Carbon Disulfide	100.	U
75-35-4	1,1-Dichloroethene	100.	บ
75-34-3	1,1-Dichloroethane	100.	U
540-59-0	1,2-Dichloroethene (total)	100.	U
67-66-3	Chloroform	100.	Ū
107-06-2	1,2-Dichloroethane	100.	Ū
78-93-3	2-Butanone	200.	U
71-55-6	1,1,1-Trichloroethane	100.	U
56-23-5	Carbon Tetrachloride	100.	y R
108-05-4	Vinyl Acetate	200.	U
75-27-4	Bromodichloromethane	100.	บ
78-87-5	1,2-Dichloropropane	100.	U
10061-01-5	cis-1,3-Dichloropropene	100.	U
79-01-6	Trichloroethene	100.	U
124-48-1	Dibromochloromethane	100.	ប
79-00-5	1,1,2-Trichloroethane	100.	U
71-43-2	Benzene	100.	U
10061-02-6	Trans-1,3-Dichloropropene	100.	[ט]
75-25-2	Bromoform	100.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
127-18-4	Tetrachloroethene	2200.	į
79-34-5	1,1,2,2-Tetrachloroethane	100.	U
108-88-3	Toluene	100.	U
108-90-7	Chlorobenzene	100.	U
100-41-4	Ethylbenzene	100.	U
100-42-5	Styrene	100.	U
1330-20-7	Xylene (total)	100.	U
		l	l

## VOLAT E ORGANICS ANALYSIS DATA SHEET TENIATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-12

b Name: PACE

Contract:

tab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

trix: (soil/water) WATER

Lab Sample ID: 3334.4

?>mple wt/vol:

5. (g/mL) ML

Lab File ID: J2557

Level: (low/med) LOW

Date Received: 5/10/91

& Moisture: not dec.100.

Date Analyzed: 5/13/91

lolumn: (pack/cap) PACK

Dilution Factor:

20.00

number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		-		
2		-		
3		-		
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FORM I VOA-TIC

1/87 Rev.

## VOLA1\_LE ORGANICS ANALYSIS DATA SHEET

' A SAMPLE NO.

Lab Name: PACE Contract:

ample wt/vol:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3335.2

Indicative (post) according to a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and a pumple and

Level: (low/med) LOW Date Received: 5/10/91

Moisture: not dec.100. Date Analyzed: 5/15/91

Column: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

5. (g/mL) ML Lab File ID: J2628

			~
74-87-3	Chloromethane	200.	ט
74-83-9	Bromomethane	200.	Ū
75-01-4	Vinyl Chloride	200.	Ū
75-00-3	Chloroethane	200.	Ŭ
	Methylene Chloride	100.	Ū
67-64-1		200.	Ū
75-15-0	Carbon Disulfide	100.	บั
75-35-4	1,1-Dichloroethene	100.	Ū
75-34-3	1,1-Dichloroethane	100.	Ū
540-59-0	1,2-Dichloroethene (total)	100.	บ
67-66-3	Chloroform	100.	U
107-06-2	1,2-Dichloroethane	100.	U
78-93-3	2-Butanone	200.	15K
71-55-6	1,1,1-Trichloroethane	100.	U
56-23-5	Carbon Tetrachloride	100.	UR
108-05-4	Vinyl Acetate	200.	ľŪ
75-27-4	Bromodichloromethane	100.	U
78-87-5	1,2-Dichloropropane	100.	ט
10061-01-5	cis-1,3-Dichloropropene	100.	U
79-01-6	Trichloroethene	100.	U
124-48-1	Dibromochloromethane	100.	U
79-00-5	1,1,2-Trichloroethane	100.	U
71-43-2	Benzene	100.	U _
10061-02-6	Trans-1,3-Dichloropropene	100.	ע ט
	Bromoform	100.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
	Tetrachloroethene	2700.	)
	1,1,2,2-Tetrachloroethane	100.	U
108-88-3		100.	U
	Chlorobenzene	100.	U
100-41-4	Ethylbenzene	100.	U
100-42-5	Styrene	100.	บ
1111 11	Xylene (total)	100.	U

## 1E VOLA' LE ORGANICS ANALYSIS DATA SHEET TEN.ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

ab Name: PACE

Contract:

b Code: PACE Case No.: EPC SAS No.:

SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3335.2

cample wt/vol: 5. (g/mL) ML

Lab File ID: J2628

\_avel: (low/med) LOW

Date Received: 5/10/91

^ Moisture: not dec.100.

Number TICs found: 0

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
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FORM I VOA-TIC

1/87 Rev.

# VOLALLE ORGANICS ANALYSIS DATA SHEET

S1-12TB () () > 8

Lab Name: PACE

Contract:

ab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3337.9

ample wt/vol:

5. (g/mL) ML

Lab File ID: J2608

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	Ū
	Chloroethane	10.	Ū
75-09-2	Methylene Chloride	5.	Ū
	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
	1,1-Dichloroethene	5.	U
	1,1-Dichloroethane	5.	ט
540-59-0	1,2-Dichloroethene (total)_	5.	ט
67-66-3	Chloroform	5.	ט
107-06-2	1,2-Dichloroethane	5.	U_
	2-Butanone	10.	UR
71-55-6	1,1,1-Trichloroethane	5.	U
	Carbon Tetrachloride	5.	OR
	Vinyl Acetate	10.	U
	Bromodichloromethane	5.	Ü
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	ט
	Dibromochloromethane	5.	Ū
	1,1,2-Trichloroethane	5.	U
	Benzene	5.	U
	Trans-1, 3-Dichloropropene	5.	DZ.
	Bromoform	5.	של
	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	שו
	Tetrachloroethene	5.	U
	1,1,2,2-Tetrachloroethane	5.	U
108-88-3		5.	U
	Chlorobenzene	5.	Ū
100-41-4	Ethylbenzene	5.	Ū
100-42-5	Styrene	5.	Ū
	Xylene (total)	5.	Ū

## VOLAT E ORGANICS ANALYSIS DATA SHEET TENLATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-12TB せせせンタ

b Name: PACE

Contract:

o Code: PACE Case No.: EPC SAS No.:

SDG No.:

trix: (soil/water) WATER

Lab Sample ID: 3337.9

.ample wt/vol: 5. (g/mL) ML

Lab File ID: J2608

~vel: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

.oiumn: (pack/cap) PACK

Dilution Factor:

1.00

CONCENTRATION UNITS:

i imber TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2. 3. 4.				
5.				
7.				
0				
11				
.4.				
16.				
18:				
0				
1.				
4.				
_5. 26.				
^7. 8. 29.				
30.				

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S4-10 3 ... 4

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3341.7

ample wt/vol: 5. (g/mL) ML Lab File ID: J2629

Level: (low/med) LOW Date Received: 5/10/91

Moisture: not dec.100. Date Analyzed: 5/15/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

		<del></del>	<del></del>
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	Ū
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	Ū
75-09-2	Methylene Chloride	5.	Ū
67-64-1	Acetone	10.	ט
75-15-0	Carbon Disulfide	5.	ט
	1,1-Dichloroethene	5.	Ū
	1,1-Dichloroethane	5.	Ū
	1,2-Dichloroethene (total)	5.	U
	Chloroform	5.	ប
107-06-2	1,2-Dichloroethane	5.	U
	2-Butanone	10.	UR
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	UB
108-05-4	Vinyl Acetate	10.	UJ
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	ַ
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	ប
71-43-2	Benzene	. 5.	U_
10061-02-6	Trans-1,3-Dichloropropene	5.	עֹכֹ
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	Ū
127-18-4	Tetrachloroethene	130.	
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1220 20 7	Xylene (total)	5.	tī

## 1E VOLAT E ORGANICS ANALYSIS DATA SHEET

TENLATIVELY IDENTIFIED COMPOUNDS

Contract: ab Name: PACE

S4-10 

EPA SAMPLE NO.

b Code: PACE Case No.: EPC

SAS No.:

SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3341.7

'ample wt/vol:

5. (g/mL) ML

Lab File ID: J2629

Level: (low/med) LOW

Date Received: 5/10/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Jumber TICs found: 0

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

1/87 Rev.



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEMS
VOLATILES ANALYSES DATA
METHOD 524.2 ANALYSES

Samples Collected 5/9/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

All postive results and detection limits were qualified as estimated for this sample delivery group because of integration of manual areas of most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be reevaluated.

No positive results were reported for any field samples. The laboratory inadvertently neglected to run the field duplicate sample.

Foaming occurred during the analysis of all samples except the field blank and trip blank.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Five samples were collected and submitted to PACE, Inc. on May 9, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-12FB	3336	05/09/91
S5-7	3342	05/09/91
S6-12	3343	05/09/91
S6-12TB	3345	05/09/91

Sample S6-12DUP was also submitted with this sample delivery group. The laboratory inadvertently neglected to run the duplicate.



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/16/91.

#### B. Continuing

Continuing calibration criteria were met on 5/20/91.

#### IV. Blanks

The trip blank, field blank, and method blanks were clean.

## V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-12. The relative percent difference for benzene was above QC criteria. No positive results for this compound were reported, so data was not qualified.



## VII. Field Duplicates

Due to an oversight by the laboratory, the field duplicate was not run.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

No positive results were reported for this sample delivery group.

## X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride Chloroethane	0.48 0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45



Compound	MDL (ug/L)
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Results and detection limits were acceptable with regard to the supporting data.

## XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

## XII. System Performance

System performance was acceptable.

## XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the integration of manual areas for most of the compounds.

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0033360 05/09/91 05/10/91 <u>S1-12 FB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W Et 1/4/11 ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	DA CON
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5 0.5	ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND
			· <del>-</del>

MDL Method Detection Limit
ND Not detected at or above the MDL.

00028

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0033425 05/09/91 05/10/91 <u>\$5</u> -7
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND WJ ND WJ ND (
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

00032

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0033433 05/09/91 05/10/91 S6-12
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WS Exsiding
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND (J) ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Uni</u>	ts <u>MD</u> I	95 0033450 05/09/91 05/10/91 S6-12 TB	
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 N Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	40DIFIED ug/ ug/ ug/ ug/ ug/	L 0.5 L 0.5 L 0.5 L 0.5	ND ND ND ND ND ND ND ND	let (
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/ ug/ ug/ ug/ ug/	L 0.5 L 0.5 L 0.5 L 0.5	ND ND ND ND ND	
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/ ug/ ug/ ug/ ug/	L 0.5 L 0.5 L 0.5 L 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N	•
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/ ug/ ug/ ug/ ug/	L 0.5 L 0.5 L 0.5 L 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N	
Ethyl benzene Xylene, total	ug/ ug/		ND   ND	

MDL Method Detection Limit
ND Not detected at or above the MDL.



## DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

VOLATILES ANALYSES DATA

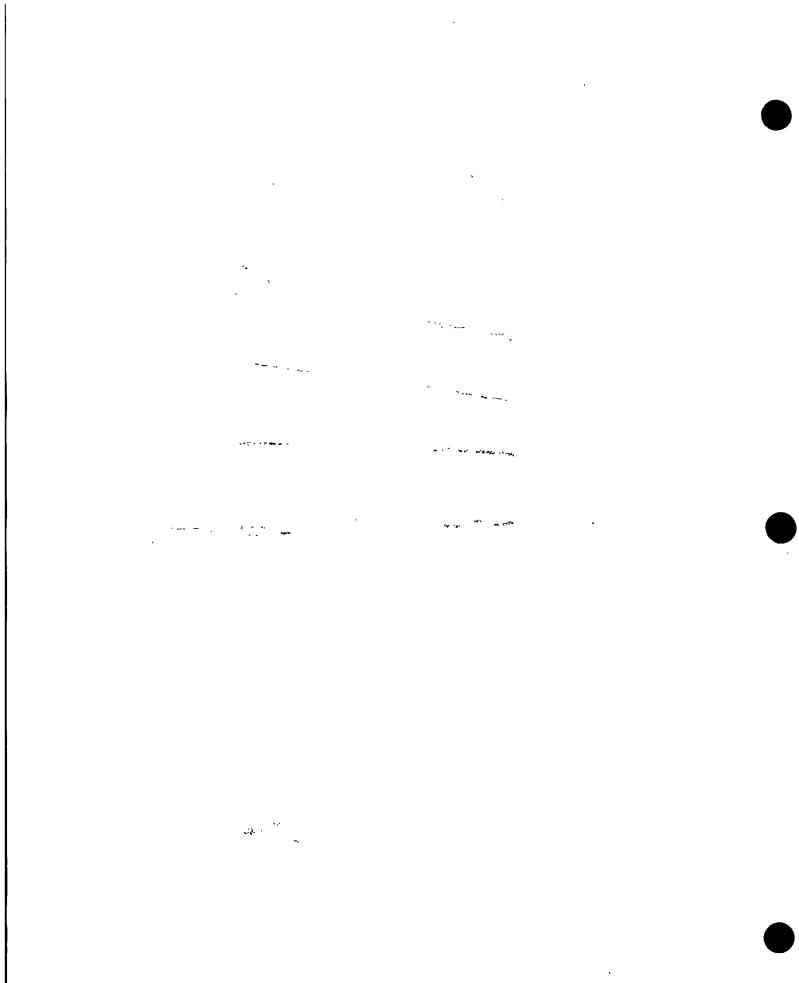
Samples Collected 05/10/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233





#### EXECUTIVE SUMMARY

Tetrachloroethene was the only valid target compound detected above the detection limit. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable. (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Data Validation for Environmental Project Control, Inc.

Samples Collected May 10, 1991

Volatiles Analyses Data

#### Case Narrative

Four treatment system samples were collected May 10, 1991 and submitted to Pace, Inc. May 11, 1991. The laboratory was requested to perform purgeable volatile target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  range may adversely affect the more volatile compounds.

Tetrachloroethene is the only valid target compound detected. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3359	S1-13	05/10/91
3360	S1-13DUP	05/10/91
3362	S1-13TB	05/10/91
3354	S4-11	05/10/91

The areas reviewed during validation are listed below.



#### ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment of Data for a Case



#### DATA VALIDATION

#### I. Sample Holding Times

All samples were analyzed within holding time.

#### II. Instrument Performance

Instrument J met bromofluorobenzene (BFB) ion abundance criteria on 04/24/91 at 11:58 and on 05/11/91 at 17:12.

Instrument G met BFB ion abundance criteria on 05/14/91 at 12:28, on 05/15/91 at 12:47, and on 05/16/91 at 11:32.

#### III. Calibration

The areas for some internal standards and target compounds were manually integrated. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. This validation has been completed on the assumption that the manual integrations as done and reported by the laboratory were valid and correct. No internal standard or surrogate peaks were manually integrated; data do not appear to be affected.

Response factors and percent relative standard deviation (%RSD) for trans 1,3-dichloropropene cannot be calculated from the quantitation reports. This compound was not detected but the non-detects in the associated samples have been qualified as estimates.

#### Initial Calibration 04/24/91 Inst J

The associated sample is S1-13.

Carbon tetrachloride failed to meet the 0.10 response factor criteria established for this project. This compound was not detected but the non-detect in the associated sample has been rejected.

All compounds met the 30% relative standard deviation (RSD) criteria.

#### Initial Calibration 05/14/91 Inst G

The associated samples are: S1-13TB, S1-13DUP, S1-13MS, S1-13MSD, and S4-11.



2-Butanone failed to meet the 0.10 average relative response factor criteria established for this project. This compound was not detected but the non-detects in the associated samples have been rejected.

2-Butanone, at 32%, failed to meet the 30% relative standard deviation (RSD) criteria. This compound was not detected and the non-detects were previously rejected in the associated samples.

## Continuing Calibration 05/11/91 1815 Inst. J

The associated sample is S1-13.

Carbon tetrachloride failed to meet the 0.10 relative response factor criteria established for the project. The non-detect in the associated sample was previously rejected.

The following compounds failed to meet the 25% difference (D) criteria:

chloromethane (32%)
trans 1,3-dichloropropene (76%)
2-hexanone (28%)

These compounds were not detected but the non-detects for trans 1,3-dichloropropene were qualified as estimates. No other data were qualified.

#### Continuing Calibration 05/15/91 1323 Inst. G

Associated samples are: S1-13-TB, S1-13DUP, S1-13MS, and S1-13MSD.

2-Butanone failed to meet the 0.10 minimum RRF criteria. This compound was not detected and the non-detects were previously rejected in the associated samples.

All compounds met the 25% difference criteria.

## Continuing Calibration 05/16/91 1153 Inst. G

The associated sample is S4-11.

2-Butanone failed to meet the 0.10 minimum RRF criteria. This compound was not detected and the non-detect in the associated sample was previously rejected.

The following compounds did not meet the 25% difference criteria:



methylene chloride (37%) acetone (44%)

These compounds were not detected and no data were qualified.

#### IV. Blanks

Methylene chloride and toluene were detected in VBLK01 at 9 and 4 ppb, respectively. These compounds were not detected in the associated samples and no data have been qualified.

No target compounds were detected in VBLK02, VBLK03, or S1-13TB.

#### V. Surrogate Recovery

All surrogate recoveries were within control limits.

## VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike recoveries are within the established QC limits.

The Relative Percent Difference (RPD) between matrix spike (MS) and matrix spike duplicate (MSD) recoveries are within the established QC limits.

#### VII. Field Quality Control Samples

S1-13DUP is a field duplicate of S1-13. Tetrachloroethene was detected at 3000 ppb in the sample and 2500 ppb in the field duplicate. These values met relative percent difference criteria. No other target compounds were detected in either sample.

#### VIII. Internal Standards Performance

All retention times (RT) and internal standard (IS) areas are acceptable.

## IX. TCL Compound Identification

Compound identifications are acceptable.



## X. Compound Quantitation and Reported Detection Limits

Results and detection limit quantitations are acceptable with regard to the supporting data.

## XI. Tentatively Identified Compounds

No TICs were detected.

## XII. System Performance

System performance is acceptable.

## XI. Overall Assessment of Data for a Case

Tetrachloroethene was the only valid target compound detected above the detection limit. No TICs were detected.

Some positive results and non-detects have been qualified in some manner due to method reporting criteria or failed quality control criteria.

00024

\$1**-**13

#### 1A VOLA'1\_LE ORGANICS ANALYSIS DATA SHEET

ab Name: PACE Contract:

Tab Code: PACE Case No.: EPC SAS No.: SDG No.:

.Matrix: (soil/water) WATER Lab Sample ID: 3359.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2549

Level: (low/med) LOW Date Received: 5/11/91

Moisture: not dec.100. Date Analyzed: 5/12/91

Column: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

74-87-3	Chloromethane	200.	U
	Bromomethane	200.	ט
75-01-4	Vinyl Chloride	200.	טו
75-00-3	Chloroethane	200.	U
75-09-2	Methylene Chloride	100.	U
67-64-1		200.	Ū
75-15-0	Carbon Disulfide	100.	U
	1,1-Dichloroethene	100.	ַט
75-34-3	1,1-Dichloroethane	100.	U
540-59-0	1,2-Dichloroethene (total)_	100.	U
67-66-3	Chloroform	100.	U
107-06-2	1,2-Dichloroethane	100.	טן
78-93-3	2-Butanone	200.	U
71-55-6	1,1,1-Trichloroethane	100.	U
56-23-5	Carbon Tetrachloride	100.	UR
108-05-4	Vinyl Acetate	200.	U
75-27-4	Bromodichloromethane	100.	U
78-87-5	1,2-Dichloropropane	100.	U
10061-01-5	cis-1,3-Dichloropropene	100.	ַט
79-01-6	Trichloroethene	100.	U
124-48-1	Dibromochloromethane	100.	U
	1,1,2-Trichloroethane	100.	U
71-43-2		100.	U_
10061-02-6	Trans-1,3-Dichloropropene	100.	UU
75-25-2	Bromoform	100.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	ប្រ
	Tetrachloroethene	3000.	ļ
79-34-5	1,1,2,2-Tetrachloroethane	100.	U
108-88-3	Toluene	100.	U
108-90-7	Chlorobenzene	100.	U
100-41-4	Ethylbenzene	100.	U
100-42-5	Styrene	100.	Ü
1330-20-7	Xylene (total)	100.	ן ט

1E

VOLAT 'E ORGANICS ANALYSIS DATA SHEET TEN.ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

l ib Name: PACE

Contract:

b Code: PACE Case No.: EPC SAS No.:

SDG No.:

! itrix: (soil/water) WATER

Lab Sample ID: 3359.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2549

level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/12/91

Dilution Factor: 20.00

: lumn: (pack/cap) PACK

CONCENTRATION UNITS:

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
1				
2				
3		_     -	<del></del>	
5:		-  -		
6:		-		
7				
8		_		
9		-		
0		-  -		
2.				
3		_		
4	<del></del>	_		
5		-		
7.		-     -		
o				
9	7	_  -		
9.		-  -	<del></del>	
1		-		
)·				
<b>1</b> •				
·		-  -		
5	,	-  -		
3	,		-	
		-		

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s1-13DUP0 0 0 3 1

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

atrix: (soil/water) WATER Lab Sample ID: 3360.3

cample wt/vol: 5.

5. (g/mL) ML

Lab File ID: G2910

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

Q

	<del></del>	
74-87-3Chloromethane	200.	U
74-83-9Bromomethane	200.	U
75-01-4Vinyl Chloride	200.	ט
75-00-3Chloroethane	200.	Ū
75-09-2Methylene Chloride	100.	Ū
67-64-1Acetone	200.	ט
75-15-0Carbon Disulfide	100.	ט
75-35-41,1-Dichloroethene	100.	U
75-34-31,1-Dichloroethane	100.	U
540-59-01,2-Dichloroethene (total)	100.	U
67-66-3Chloroform	100.	Ū
107-06-21,2-Dichloroethane	100.	Ū
78-93-32-Butanone	200.	UR
71-55-61,1,1-Trichloroethane	100.	บ
56-23-5Carbon Tetrachloride	100.	U
108-05-4Vinyl Acetate	200.	U
75-27-4Bromodichloromethane	100.	U
78-87-51,2-Dichloropropane	100.	ប
10061-01-5cis-1,3-Dichloropropene	100.	U
79-01-6Trichloroethene	100.	ט
124-48-1Dibromochloromethane	100.	U
79-00-51,1,2-Trichloroethane	100.	U
71-43-2Benzene	100.	U
10061-02-6Trans-1, 3-Dichloropropene	100.	\U5
75-25-2Bromoform	100.	ט
108-10-14-Methyl-2-Pentanone	200.	U
591-78-62-Hexanone	200.	ប្រ
127-18-4Tetrachloroethene	2500.	1'
79-34-51,1,2,2-Tetrachloroethane	100.	U
108-88-3Toluene	100.	U
108-90-7Chlorobenzene	100.	U
100-41-4Ethylbenzene	100.	U
100-42-5Styrene	100.	U
1330-20-7Xylene(total)	100.	Ü
• , , , , , , , , , , , , , , , , , , ,		

VOLA" 'E ORGANICS ANALYSIS DATA SHEET TEN\_ATIVELY IDENTIFIED COMPOUNDS

S1-13DUP 0003

EPA SAMPLE NO.

ab Name: PACE Contract:

SDG No.:

atrix: (soil/water) WATER

ab Code: PACE Case No.: EPC SAS No.:

Lab Sample ID: 3360.3

Sample wt/vol:

5. (g/mL) ML

Lab File ID: G2910

evel: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

olumn: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1 2 = = = = = = = = = = = = = = = = = =				
5.				
8. 9.				
10.				
14:				
17.				
19. 20. 21.				
22. 23. 24.				
25. 26. 27.				
28. 29. 30.				

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## VOLA1\_\_E ORGANICS ANALYSIS DATA SHEET

F SAMPLE NO. <del>14438</del> 51-EXTE

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDE No.:

atrix: (soil/water) WATER

Lab Sample ID: 3382.0

Cample wt/vol: 5. (g/mL) ML

Lab File ID: GZ907

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzeds. 5/15/90

Dilution Factor: 1.30

Column: (pack/cap) PACK

CONCENTRATION UNITS:

CAS NO. (ug/L or ug/Kg) UG/% Q COMPOUND

74-87-3Chloromethane	10.	IC'
74-83-9Bromomethane	To.	'TE'
75-01-4Vinyl Chloride	141.	iΦ
75-00-3Chloroethane	- La.	liu
75-09-2Methylene Chloride	5.	(35)
67-64-1Acetone	1.37.	, W.
75-15-0Carbon Disulfide	-  ਤ.	¦iÜ
75-35-41,1-Dichloroethene	5.	ior:
75-34-31,1-Dichloroethane	<b>5.</b>	TT.
540-59-01,2-Dichloroethene (total)	<b>55.</b>	্ৰাজ
67-66-3Chloroform	ಶಾ.	ান্টে
107-06-21,2-Dichloroethane	5.	(U)
78-93-32-Butanone	بهينه	ter R
71-55-61,1,1-Trichloroethane		'' <u>'</u> '' (10)
56-23-5Carbon Tetrachloride	5.	انگارا
108-05-4Vinyl Acetate	1.G:.	ָּט.
75-27-4Bromodichloromethane	5.	Ū.
78-87-51,2-Dichloropropane		:0
10061-01-5cis-1,3-Dichloropropene	-	I
79-01-6Trichloroethene		'U'
124-48-1Dibromochloromethane		<b>.</b> ₫.
79-00-51,1,2-Trichloroethane		্র <u>ক্র</u>
71-43-2Benzene	<b>5.</b>	<b>u</b> _
10061-02-6Trans-1,3-Dichloropropene	. 1	,ह्य 🔾
75-25-2Bromoform	.1 — 1	מי
108-10-14-Methyl-2-Pentanone	IA.	Œ
591-78-62-Hexanone		1.0
127-18-4Tetrachloroethene	1	`Œ'
79-34-51,1,2,2-Tetrachloroethane	5.	<b>(2)</b>
108-88-3Toluene	55.	<u>or</u>
108-90-7Chlorobenzene	5.	<u>m</u>
100-41-4Ethylbenzene	1	<u>u</u>
100-42-5Styrene	I	<u>, TC</u>
1330-20-7Xylene(total)	5:.	יט
		'l
·		

1E

VOLA' LE ORGANICS ANALYSIS DATA SHEET TENLATIVELY IDENTIFIED COMPOUNDS

s1-130 1 39

EPA SAMPLE NO.

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3362.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2907

evel: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100.
Date Analyzed: 5/15/91

olumn: (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1 2				
4. 5. 6.				
8.				
10.				
14.				
16. 17. 18.				
19. 20. 21. . 22.				
23.				
26. 27. 28.	· · · · · · · · · · · · · · · · · · ·	 		
29.				

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A SAMPLE NO.

54-11 00044

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3354.9

Sample wt/vol:

5. (g/mL) ML Lab File ID: G2924

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor:

10.00

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

74-87-3	Chloromethane	100.	ט	_[
74-83-9	Bromomethane	100.	Ŭ	.
75-01-4	Vinvl Chloride	100.	Ŭ	
75-00-3	Chloroethane	100.	Ū	1
75-09-2	Methylene Chloride	50.	Ŭ	
67-64-1	Acetone	100.	Ū	
75-15-0	Carbon Disulfide	50.	Ū	ł
75~35~4	1,1-Dichloroethene	50.	Ü	ŀ
75-34-3	1,1-Dichloroethane	50.	שׁ	ļ
540-59-0	1,2-Dichloroethene (total)	50.	Ū	1
67-66-3	Chloroform	50.	Ü	ţ
107-06-2	1,2-Dichloroethane	50.	ŬΛ	J
78-93-3	2-Butanone	100	TOR	1
71-55-6	1,1,1-Trichloroethane	50.	ט '	- [
56-23-5	Carbon Tetrachloride	50.	ט	1
108-05-4	Vinvl Acetate	100.	Ü	
75-27-4	Bromodichloromethane	50.	Ū	ł
78-87-5	1,2-Dichloropropane	50.	บ	1
10061-01-5	cis-1.3-Dichloropropene	50.	IJ	
79-01-6	·Trichloroethene	29.	ם ם ם	فح
124-48-1	Dibromochloromethane	50.	ਰੋ⁻	Blogia
79-00-5	1,1,2-Trichloroethane	50.	שׁ	1
71-43-2	Benzene	50.	Ū	1
10061-02-6	Trans-1,3-Dichloropropene	50.	UÍ	
75~25~2	Bromoform	50.	ี ซ	1
108-10-1	4-Methyl-2-Pentanone	100.	Ū	
591-78-6	2-Hexanone	100.	Ü	
127-18-4	2-HexanoneTetrachloroethene1,1,2,2-Tetrachloroethane	1400.		3174
79-34-5	1,1,2,2-Tetrachloroethane	50.	B, U	181111
108-88-3		50.	Ü	
108-90-7	Chlorobenzene	50.	שׁ	
100-41-4	Ethylbenzene	50.	บ	1
100-42-5	Styrene	50.	Ū	
100 72 0	Xylene(total)	50.	Ū	1

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Resubmitted Data

#### 1E VOLAT 'E ORGANICS ANALYSIS DATA SHEET TEN\_ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S4-11 0 0 0 4

ab Name: PACE

Contract:

Case No.: EPC SAS No.:

SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3354.9

Sample wt/vol:

ab Code: PACE

5. (g/mL) ML

Lab File ID: G2924

evel: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

olumn: (pack/cap) PACK

Dilution Factor:

10.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1:				
4.				
5. 6.	e			
8.	स			
9. 10. 11.				
13.				
14. 15. 16.				
18.				
20.				
21.				
25.				
27.	-			
28				
30				

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## DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/10/91

Chemical Analyses Performed By PACE, Incorporated

August 20, 1991 Rev. 9/6/91

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

Data quality for this sample delivery group was good. Detection limits for aromatic compounds have been estimated for all samples. Detection limits for 2-butanone were rejected in all samples. These samples were apparently shipped via overnight courier; however, this information was not provided on the chain of custody forms. The chain of custody forms do not show that the samples were relinquished by the sampler.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Case Narrative

Five samples were collected and submitted to PACE, Inc. on May 10, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
V131V1FS	3387	05/10/91
V131V1TB	3388	05/10/91
V131V1FD	3389	05/10/91
V197V1FS	3425	05/10/91
V154V1FS	3427	05/10/91



## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimates in all samples in this sample delivery group.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met on 5/17/91 with the exception of the RRF for 2-butanone (actual 0.030; criteria 0.1) and %RSD for 2-butanone (actual 39.9; criteria 30). Detection limits for 2-butanone were rejected in all samples.

#### B. Continuing

Continuing calibration criteria were met on 5/19/91 with the exception of the RF for 2-butanone (actual 0.019; criteria 0.1) and the % difference for acetone (actual 53.2; criteria 25) and 2-butanone (actual 36.7; criteria 25). Detection limits for acetone were qualified as estimated in Samples V131V1FS, V131V1TB, and V154V1FS. Other data were not affected.

Continuing calibration criteria were met on 5/20/91 with the exception of the % difference for bromomethane (actual 32.9; criteria 25), chloroethane (actual 25.6; criteria 25), methylene chloride (actual 26.5; criteria 25), and benzene (actual 26.7; criteria 25). Data were not affected.

#### IV. Blanks

Acetone was reported in Method Blank VBLK01. Methylene chloride was reported in Method Blank VBLK02 and the trip blank. Methylene chloride reported in Sample V197V1FS was qualified as less than the reported value.



## V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate analyses for this day's samples were conducted on UniFirst treatment system samples. Data were within acceptance criteria.

#### VII. Field Duplicates

Compounds and concentrations (in ug/L) reported for Samples V131V1FS and V131V1FD were as follows:

Compound	<u>V131V1FS</u>	<u>V131V1FD</u>
Vinyl Chloride	760	760
1,2-Dichloroethenes	1400	1300
Trichloroethene	280	310

Agreement was excellent and within QC criteria.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

Trichloroethene was reported in Sample V154V1FS at a concentration of 440 ug/L. The correct concentration was 420 ug/L.

The concentration of 1,2-dichloroethenes reported in Sample V197V1FS (2100 ug/L) was slightly beyond the calibration range of the instrument. However, this concentration did meet accuracy and precision criteria and was accepted unqualified.

All other results and detection limits were acceptable with regard to the supporting data.



## XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

## XII. System Performance

System performance requires attention. Manual integration should be addressed.

All samples were analyzed outside the required holding time.

RF criteria needs to be monitored.

## XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was good.

All aromatic compounds were qualified as estimates.

All 2-Butanone detection limits were rejected.

EPA SAMPLE NO.

Contract: Lab Name: PACE

! V131FS

SDG No.: 0 28 

Matrix: (soil/water) WATER Lab Sample ID: 3387

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2950

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/19/91

Column: (pack/cap) PACk Dilution Factor: 10.00

## CONCENTRATION UNITS:

CAS NO.		nā/F or nā/þ		α
1		<del></del>		
1 74-87-3	Chloromethane	;	100.	: U:
1 74-83-9	Bromomethane	;	100.	: U:
75-01-4	Vinyl Chloride		760.	+
; 75-00-3	Chloroethane	;	100.	:U :
: <b>75-</b> 09-2	Methylene Chloride	;	50.	: U :
: 67-64-1	Acetone	;	100.	: \u
1 75-15-0	Carbon Disulfide	;	50.	: U :
1 75-35-4	1,1-Dichloroethene		50.	:U :
1 75-34-3	1,1-Dichloroethane	;	50.	; U ;
: 540-59-0	1,2-Dichloroethene	(total):	1400.	1
1 67-66-3	Chloroform		50.	: U:
107-06-2	1.2-Dichloroethane	:	50,	: ບຸ
: 78 <del>-9</del> 3-3	2-Butanone		140.	11 F- 1
1 71-55-6	1,1,1-Trichloroetha	ane:	50.	: U :
1 56-23-5	Carbon Tetrachloric	ie:	50.	: U :
108-05-4	Vinyl Acetate		100.	:U :
75-27-4	Bromodichloromethan	ne	50.	: U :
1 78-87-5	1,2-Dichloropropane	·;	50.	:U ;
110061-01-5	cis-1,3-Dichloropro	pene:	50.	:U :
79-01-6	Trichloroethene		280.	; ;
124-48-1	Dibromochloromethar	ne;	50.	; U ;
1 79-00-5	1,1,2-Trichloroetha		50.	:U
	Benzene		50.	: Lu:
110061-02-6	Trans-1,3-Dichlorop	ropene:	50.	: U :
1 75-25-2	Bromoform		50.	U
: 108-10-1	4-Methyl-2-Pentanor	nei	100.	:ប :
: 591-78-6	2-Hexanone	;	100.	: U :
127-18-4	Tetrachloroethene _	!	50.	:U :
1 79-34-5	1,1,2,2-Tetrachlord	ethane!	50.	וטי ו
108-88-3	Toluene	;	50.	:n7 :
108-90-7	Chlorobenzene		50.	: ۲۰۱
100-41-4	Ethylbenzene		50.	:n? :
100-42-5	Styrene		50.	:n7 :
1330-20-7	Xylene(total)	!	50.	107)
		:		·i

#### VULHITLE UNDANILS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V131FS

Lab Name: PACE

Contract:

SDG QQ 0.29

. Matrix: (soil/water) WATER

Lab Sample ID: 3387

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2950

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Number TICs found: 0

Date Analyzed: 5/19/91

Column: (pach/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	: : RT	EST. CONC.	: : 0
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51_				!:
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30			;	;
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29				:
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

1 V131TB

Matrix: (soil/water) WATER Lab Sample ID: 3388

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2953

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/19/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.		(nā/r or nā/		Ω
;	Chloromethane	ب میں بات کانو میں جات اسے می <b>ں کا فی می</b> ا جا   	10.	; U ;
1 74-83-9	Bromomethane		10.	:0 :
75-01-1	Vinyl Chloride		10.	Ü
- 75-00-2	Chloroethane		10.	່ນ :
, 75-09-0	Methylene Chlorid		11.	
57-E4-1	Acetone			Lul
1 75-15-0	Carbon Disulfide_		5.	U :
1 75-35-4	1,1-Dichloroethen	·	5.	i U
. 75-34-3	1,1-Dichloroethane		5.	ΙŪ :
	1.2-Dichloroethen		5.	IU :
	Chloroform		5.	· U
1 107-06-3	1,2-Dichloroethan	·	5.	Ü
1 78-93-3	2-Butanone	·	نبونيد	TUR :
1 71-55-6	1,1,1-Trichloroet	ane	5.	Ιυ :
56-23-5	Carbon Tetrachlor:	de		iù l
108-05-4	Vinyl Acetate		10.	: U :
75-27-4	Bromodichlorometha	ane :	5.	: U:
78-87-5	1,2-Dichloropropas	ne;	5.	:U :
110061-01-5	cis-1,3-Dichloropi	opene!	5.	: U :
79-01-6	Trichloroethene _	1	5.	:U :
124-48-1	Dibromochlorometha	ne:	5.	: U :
1 79-00-5	1,1,2-Trichloroeth	ane:	5.	:U :
71-43-2	Benzene		5.	: (u:
	Trans-1,3-Dichlore		5.	:U :
1 75-25-2	Bromoform		. 5.	: U
: 108-10-1	4-Methv1-2-Pentano	ne :	10.	: U :
: 591-78-6	2-Hexanone	!	10.	:U :
1 127-18-4	Tetrachloroethene	;	5.	:U :
	1,1,2,2-Tetrachlor		5.	: U
108-88-3	Toluene		5.	: Lu:
108-90-7	Chlorobenzene		5.	10) !
100-41-4	Ethylbenzene		5.	107
1 100-42-5	Styrene		5.	וי ירחו
1330-20-7	Xylene(total)	!	5.	: n -1 :
•		:		1 1

# VULATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

Number TICs found: 0

Lab Code: PACE Case No.: EPC SAS No.: SDØ 0.0.37

Matrix: (soil/water) WATER Lab Sample ID: 3388

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2953

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/19/91

Column: (pack/cap) PACk Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER : COMPOUND NAME : RT : EST. CONC. : 1.\_\_\_\_\_|\_\_|\_\_| 2.\_\_\_\_\_|\_\_|\_\_| 5.\_\_\_\_\_|\_\_| 6.\_\_\_\_| 7. \_\_\_\_\_|\_\_|\_\_\_| 8.\_\_\_\_\_ 10.\_\_\_\_ 11.\_\_\_\_ 1 17. \_\_\_\_; 13.\_\_\_\_| 15.\_\_\_\_| 16.\_\_\_\_| 17.\_\_\_\_\_|\_\_|\_\_| 18.\_\_\_\_\_| 19.\_\_\_\_| \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_\_|\_\_\_| \_\_\_\_: \_\_\_\_;\_\_;\_\_; 24.\_\_\_\_| \_\_\_\_| \_\_\_\_\_ 27.\_\_\_\_\_|\_\_\_| 28.\_\_\_\_\_|\_\_| <sup>29</sup>• \_\_\_\_\_|\_\_|\_\_| \_\_\_\_\_ \_\_\_\_\_!\_\_\_!\_\_\_!

FORM I VOA-TIC

1/87 Rev.



00041

## SAMPLE DATA

95003389. 1 VI31VIFBDels 6/26/91

## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. MISTALED ---

V131FB D

Lab Name: PACE Contract:

SDG No.: 000%,200

Matrix: (soil/water) WATER

Lab Sample ID: 3389

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2968

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNIT	rs:
--------------------	-----

CAC NO	COMPOUND	CONCEN				_	
CAS NO.	COMPOUND	rug/L	or	ug/Kg)	OG/L	۵	
!							;
: 74-87-3	Chloromethane			!	100.	١U	;
1 74-83-9	Bromomethane			;	100.	: U	:
1 75-01-4	Vinyl Chloride			:	760.	;	- 1
1 75-00-3	Chloroethane			:	100.	: U	;
! 75-09-2	Methylene Chloru	de		:	<b>5</b> 0.	: U	1
: 67-64-1	Acetone			<b>;</b>	100.	١U	;
: 75-15-0	Carbon Disulfide				50.	ŀU	;
1 75-35-4	1,1-Dichloroethe	 ne			50.	:U	;
1 75-34-3	i,1-Dichloroetha	ne		;	50.	: U	;
	1,2-Dichloroethe				1300.	;	:
: 67-66-3	Chloroform			;	50.	٠u	1
107-06-2	1.2-Dichloroetham	ne		;	°50.	:U 0	;
1 78-93-3	2-Butanone			<u> </u>	100.	WR	1
: 71-55-6	1,1,1-Trichloroe	thane		:	50.	١U	1
: 56-23-5	Carbon Tetrachlo	ride		;	50.	١U	:
108-05-4	Vinyl Acetate			;	100.	١U	;
: 75-27-4	Bromodichlorometh	iane		;	50.	:U	:
1 78-87-5	1,2-Dichloropropa	ane			50.	ΙU	- 1
110061-01-5	cis-1,3-Dichlorop	propene		:	50.	: U	ŧ
79-01-6	Trichloroethene			;	310.	;	;
124-48-1	Dibromochlorometh	ane		;	50.	١U	- 1
79-00-5	1,1,2-Trichloroet	hane			50.	¦U .	1
71-43-2	Benzene				50.	ر ۱۱	1
:10061-02-6	Trans-1,3-Dichlor	roproper	ne _	;	50.	١U	;
75-25-2	Bromoform			!	50.	:U	ŀ
108-10-1	4-Methvl-I-Pentar	ione		1	100.	: U	į
591-78-6	2-Hexanone				100.	! U	;
127-18-4	Tetrachloroethene			!	50.	: U	;
79-34-5	1,1,2,2-Tetrachlo	roethan	e_	;	50.	lu .	1
108-88-3	Toluene				50.	וואָ	;
108-90-7	Chlorobenzene			_	50.	רחו	:
100-41-4	Ethylbenzene				50.	زυ:	1
100-42-5	Styrene			!	50.	: n 7	;
1330-20-7	Xylene(total)			<u> </u>	50.	יטו	;
				_		_	_ ;

#### ANTHITTE NUMBER OF BUNDERS DATE SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

VI3IVIED V131F8 D حيد

SDG No. 0 0 0 4 3" Matrix: (soil/water) WATER Lab Sample ID: 3389

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2968

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/20/91

Dilution Factor: 10.00 Column: (pach/cap) PACk

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

: : CAS NUMBER	: COMPOUND NAME	: : RT :	: EST. CONC.	: Q
1		 		
4				
5				
' 8  9				,,
				;
7 4 <del>5</del> 1				[
13				ii
				<u></u>
16;		1		
17. 18.				
19		!		
<b></b>				
22				
24				
25;		!		!
		;		:

FORM I VOA-TIC

# VOLATILE ORGANICS ANALYSIS DATA SHEET

LY TYLES

V197FS

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 34280051

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2969

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/20/91

Column: (pack/cap) PACK Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENT				Q
7.07.0				1	400	1,,,
1 74-87-3	-Chloromethane				100.	ម
74-83-9	-Bromomethane			<u>'</u>	100.	¦U
75-01-4	-Vinyl Chloride				1900.	i 
75-00-3	-Chloroethane			<u>i</u>	100.	10
75-09-11	-Methylene Chloric	.e		¦	97.	Lerk
5/-64-1	-Acetone			<u> </u>	100.	! U
/5-15-0	-Carbon Disulfide_			<u>:</u>	50.	; U
75-35-4	-1,1-Dichloroether	Je		<u>:</u>	50.	:0
75-34-3	-1,1-Dichloroethar	,e		<u> </u>	50.	- 10 -/ 1
1 540-59-0	-1,2-Dichloroether	ne (tota	1),	<u>}</u>	2100.	1 2
1 67-66-3	-Chloroform			<sup>}</sup>	50.	:U
1 107-06-2	-1,2-Dichloroethar	Je		;	so.	טו:
: 78-93-3	2-Butanone			;	100.	WR:
1 71-55-6	·l,l,l-(richloroet	hane		;	50.	יט:
: 56-23-5	Carbon Tetrachlor	.rqe		;	50.	:U :
108-05-4	-Vinyl Acetate			;	100.	:U :
1 75-27-4	Bromodichlorometh	ane		;	50.	;U ;
1 78-87-5	1,2-Dichloropropa	ne		!	50.	:U :
10061-01-5	cis-1,3-Dichlorop	ropene .			50.	: U :
1 79-01-6	Trichloroethene _			;	41.	; J ;
124-48-1	Dibromochlorometh	ane		;	50.	; U ;
79-00-5	1,1,2-Trichloroet	hane		;	50.	: 'U'
1 71-43-2	Benzene			;	50.	:u) !
:10061-02-6	Trans-1,3-Dichlor	opropen	e _	_;	50.	וט` ;
: 75-25-2				_ ;	50.	;U ;
108-10-1	4-Methyl-2-Pentan	one		i	100.	;ប ;
591-78-6	2-Hexanone			_ 1	100.	:0 :
127-18-4	Tetrachloroethene			_	50.	:0 :
79-34-5	1,1,2,2-Tetrachlo	roethane	₹ _	;	50.	: U :
108-88-3	Toluene			_ ;	50.	: (U)
108-90-7	Chlorobenzene			_ :	50.	، ڏِن،
100-41-4	Ethylbenzene			_ ;	57.	; ] ;
100-42-5	Styrene			_ ;	50.	: " :
1330-20-7	Xylene(total)			_ ;	50.	;u~ ;
				_ !		.;;

## AOCUSTCE OUGHNICS WANTISTS BAIN SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3425

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2969 00052

Date Received: 5/11/91

Level: (low/med) LOW

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

			<del></del>	
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	! Q
=======================================	=======================================	;=======	;=========	=====
1	 	·		!
2			!	!
		1	 	! ;
		1	!	! !
5		!		!!
6		!		: :
				! <b></b> !
8  9.		<u>'</u>		¦
		!		<b>!</b>
11.		'		¦
12.		' '		'
		,		'
14				
15;				
16				
17		;		;
18				
19;		<b> </b>		
20	*			
				;
22				!
24		;		
			!	i
~55 ·		<u></u>		
30		;		i
		;		
	i	;	;	;
		;		
'		'	'	'

FORM I VOA-TIC

## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contracti

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No. :

Matrix: (soil/water) WATER

Lab Sample ID: 3427

Sample wt/vol:

5. (g/mL) ML

Lab File ID: G2956

Level: (low/med) LOW

Date Received: 5/11/91

Date Analyzed: 5/19/91

\* Moisture: not dec.100.

Column: (pack/cap) PACK

Dilution Factor:

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	Chloromethane	50.	ט	1	
74-83-9	Bromomethane	50.	ט	1	
75-01-4	Vinyl Chloride	50.	שׁ	1	
75-00-3	Chloroethane	50.	U	1	
75-09-2	Methylens Chloride	25.	U	Ī	
	Acetone	50.	ט	1	,
75-15-0	Carbon Disulfide	25.	U	1	
75-35-4	1,1-Dichloroethene	25.	यक्वत	1	
75-34-3	1,1-Dichloroethane	25.	U	ر ربيط	י האניאה י
540-59-0	1,2-Dichlorosthens (total)	480 25	日	AN 9	1991
67-66-3	Chloroform_	25.	U	1	• • •
107-06-2	1,2-Dichloroethane	25.	וט .	1 1	
78-93-3	2-Butanone	<del>50.</del> -	TU R	1 1	
71-55-6	1, 1, 1-Trichloroethane	25.	บ		
56-23-5	Carbon Tetrachloride	25.	טו	1 1	
108-05-4	Vinvl Acatata	50.	Ŭ		
75-27-4	Bromodichloromethane	25.	Ū	1 1	
78-87-5	1,2-Dichloropropana	25.	Ü	1 1	
DO61~01~5	Cis-1.3-Dighloropropens	25.	ď	1 1	
79-01-6	Trighloroethene	420-440:	1	1 1	
124~48-1	Dibromochloromethane	25.	ט		
79-00-5	1,1,2-Trichloroethane	25.	υ		
71-43-2	Banzene	25.	UJ	161	
0061-02-6	Trans-1. J-Dichloropropens	25.	บ้	1	
75-25-2	Bromoform	25.	Ū	1%	
108-10-1	4-Methyl-2-Pentanone	50.	ď	10	
591-78-6- <del></del> -	2-Hexanone	50.	Ŭ	1.~	
127-18-4	Tetrachloroethene	25.	Ŭ	Schulg	
79-34-6	1.1.2.2-Tetrachloroethane	25.	ซี	13	
108-88-3	Toluene	25.	UJ	٤١	
108-90-7	Chlorobenzene	25.	U	13	;
100-41-4	Ethylbenzene	25.	UJ	4	
100-42-5	STVrana	25.	UJ		
.330-20-7	Xylene(total)	25.	לט	Qi.	

FORM I VOA

#### 1E VOLA' LE ORGANICS ANALYSIS DATA SHEET TELLATIVELY IDENTIFIED COMPOUNDS

ab Name: PACE

Contract:

V154FS 4/مدار: <del>9 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0</del>

EPA SAMPLE NO.

V154VIFS

ab Code: PACE Case No.: EPC

SAS No.:

SDG No.:

latrix: (soil/water) WATER

Lab Sample ID: 3427

00062

Sample wt/vol:

5. (g/mL) ML

Lab File ID: G2956

. evel: (low/med) LOW

Date Received: 5/11/91

<sup>c</sup> Moisture: not dec.100.

Date Analyzed: 5/19/91

column: (pack/cap) FACK

Dilution Factor:

5.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
3.				
5				
8				
9.				
11. 12. 13.				
15				
17.				
18.				
22:				
23				
26. — —				
27. 28. 29.				
30				

FORM I VOA-TIC



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/10/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

All postive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be reevaluated.

Foaming occurred during the analysis of all samples except the field blank and trip blank.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 10, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S5-8	3355	05/10/91
S6-13	3356	05/10/91
S6-13DUP	3357	05/10/91
S6-13TB	3361	05/10/91
S1-13FB	3361	05/10/91
V140V1FD	3440	05/10/91
V140V1FB	3441	05/10/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
    - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/16/91.

#### B. Continuing

Continuing calibration criteria were met on 5/20/91. Continuing calibration criteria were met on 5/21/91 with the exception of the RF for 1,1-dichloroethane (actual 0.01137; criteria 0.1) and the % difference for 1,1-dichloroethane (actual 99.6; criteria 25). Positive sample data were not affected; detection limits for 1,1-dichloroethane were rejected in Samples S6-13TB, S1-13FB, S6-13MS, S6-13MSD, V140V1FD, and V140V1FB.

#### IV. Blanks

The trip blank, field blank, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.



#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-13. Results were within QC criteria.

#### VII. Field Duplicates

Samples S6-13 and S6-13DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58



Compound	MDL (ug/L)
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Although not reported on the Form I for Sample S5-8, 1,1-dichloroethene was reported on the quant report at 0.93 ug/L. Since this concentration is above the MDL for this project, it should have been reported on the Form I. The Form I was corrected by the validator.

Methylene chloride reported in Sample S5-8 was below the MDL determined by the PQL study for this project. This result was corrected to "ND" by the data validator.

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

Detection limits for 1,1-dichloroethane were rejected in the samples listed in Section III.

PACE Project Number: 810511500

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0033557 05/10/91 05/11/91 <u>\$5-8</u>	
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ ND 0.93 J ND 0.93 J 1.2 J ND UJ	eris 114/41
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND ND	
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND	

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810511500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0033565 05/10/91 05/11/91 <u>S6-13</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND U) EKS 1/9/91 ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Project Number: 810511500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0033573 05/10/91 05/11/91 S6-13 Dup
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND u) th 19941 ND ND ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND   ND _

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Project Number: 810511500

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MOL	95 0033581 05/10/91 05/11/91 <u>S6-13 TB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride l,1-Dichloroethene l,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W ext 1/9/91 ND 1 ND 1 ND 1 ND R ND W
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND L

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810511500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0033611 05/10/91 05/11/91 <u>S1-13 FB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W ELD 1991 ND 1999 ND ND R ND W
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND :

MDL Method Detection Limit

ND Not detected at or above the MDL.

W.R.GRACE PACE F	Project Number:	810511504
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PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034405 05/10/91 05/11/91 <u>V140 V1 FD</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ws etb 199 ND ND R
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND L

MDL

Method Detection Limit Not detected at or above the MDL. ND

W.R.GRACE PACE Project Number: 810511504

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL_	95 0034413 05/10/91 05/11/91 V140 V1 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W Change 1919 191 ND 1919 1919 1919 1919 1919 19
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
INORGANIC ANALYSES DATA

Samples Collected 5/10/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Arsenic results in V131-M1 and V140-M1 were qualified as estimated. Barium, silver, and thallium results were qualified as estimated. Lead, cadmium, and zinc data were qualified as less than their reported values. The cadmium result for V131-M1 was qualified as less than 0.1 ug/L and rounded to 0.2 ug/L for V140-M1.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.



These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Inorganic Data Validation

for

#### Environmental Project Control, Inc.

#### Samples Collected 5/10/91

#### Case Narrative

This group contained six water samples including one field blank. Three of the samples were analyzed for only total metals while the other three samples were analyzed for only cyanide.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
V131-M1	3396	5/10/91
V131M1FB	3397	5/10/91
V131-C1	3999	5/10/91
V131C1FB	3400	5/10/91
V140-M1	3415	5/10/91
V140-C1	3417	5/10/91



#### The areas reviewed during validation are listed below.

## CLP Inorganics Data Validation

I. Holding Time	nes
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- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
- V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
- XII. Overall Assessment



#### Data Validation

#### I. Holding Times

Samples were analyzed within acceptable holding times.

#### II. Calibration

CRDL recoveries were out of acceptable limits for chromium (140%) and silver (75%). No qualifications were made on the chromium data. Silver data were qualified as estimated.

#### III. Blanks

The preparation blank contained lead (0.6 ug/L) and cadmium (0.1 ug/L). Lead and cadmium data were qualified as less than their reported values.

The field blank, V131M1FB, contained lead (0.6 ug/L) and zinc (16 ug/L). Zinc results were qualified as less than their reported values.

#### IV. ICP Interference Check Sample

ICS results were satisfactory.

#### V. Matrix Spike Sample Analysis

Matrix spikes were conducted on V131-M1 and V140-M1 for metals and V131-C1 and V140-C1 for cyanide. Cyanide recoveries were satisfactory. Recoveries were out of acceptable limits for V131-M1 for arsenic (74%), barium (9%), silver (60%), and thallium (71%) and for V140-M1 for barium (9%) and silver (74%). Barium, silver, and thallium results were qualified as estimated.

#### VI. Duplicate Sample Analysis

Duplicate sample analyses were conducted on V131-M1 and V140-M1 for metals and V131-C1 and V140-M1 for cyanide. Results were satisfactory.

#### VII. Laboratory Control Sample Analysis

LCS results were satisfactory.



#### VIII. Furnace Atomic Absorption Analysis

Analytical spikes were out of acceptance limits for arsenic in V131-M1 (80%), the duplicate of V131-M1 (82%), and V140-M1 (78%) and for thallium in V131-M1 (78%). These results were qualified as estimated.

#### IX. ICP Serial Dilution Analysis

Serial dilution results were satisfactory.

#### X. Detection Limits

IDL's were less than the CRDL's.

#### XI. Sample Result Verification

Calculations were performed correctly.

The IDL for cadmium was listed as 0.1 ug/L on Form XI; the cadmium result for V131-M1 was reported as 0.09 ug/L which was below the IDL. The cadmium result for V131-M1 was qualified as less than 0.1 ug/L. Additionally, the cadmium result for V140-M1 was reported as 0.18 ug/L which suggested a precision that probably did not exist. The result was rounded to 0.2 ug/L.

#### XII. Overall Assessment

Data were considered valid with the following exceptions:

Arsenic in V131-M1 and V140-M1 were qualified as estimated due to poor analytical spike recoveries.

Barium and thallium results were qualified as estimated based on matrix spike recoveries.

Silver data were qualified as estimated based on poor CRDL and matrix spike recoveries.

Lead and cadmium data were qualified as less than their reported values based on preparation blank results. The cadmium result for V131-M1 was qualified as less than 0.1 ug/L since the IDL was 0.1 ug/L. Cadmium in V140-M1 was rounded to 0.2 ug/L.

Zinc results were qualified as less than their reported values based on field blank results.

## INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.

	INORGANIC AI	ANTIRER DATA REFER	,
		0 0 0 2 5	V131-M1
ab Name: PACE_INCOR	PORATED	Contract: EPC	
ab Code:	Case No.:	SAS No.:	SDG No.: V131M1
atrix (soil/water):	WATER	Lab Sampl	e ID: 3396.4
evel (low/med):	TOM	Date Rece	ived: 05/11/91
Solids:	o	•	
			(**

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

	<del></del>		,		
CAS No.	Analyte	Concentration	С	Q	M
7429-90-5	Aluminum	195	ਹ		P
7440-36-0	Antimony	0.80	บ		F
7440-38-2	Arsenic	1.9	B	WHY J	F
7440-39-3	Barium -	26.0	B	J	P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	0.1 0-090	B	u	F
7440-70-2	Calcium	46900			P_
7440-47-3	Chromium	9.5	ប៊		P
7440-48-4	Cobalt	6.4	U		P_
7440-50-8	Copper	6.0	B		P_
7439-89-6	Iron	1420_			P_
7439-92-1	Lead	0.80_	$\bar{\mathcal{B}}$	u	F_
7439-95-4	Magnesium	9930_	_		P_
7439-96-5	Manganese	1160_	_		P_
7439-97-6	Mercury	0.20_	U		C∇
7440-02-0	Nickel	8.6_	U		P_
7440-09-7	Potassium	7200_			P_
7782-49-2	Selenium	0.50	บิ		F_
7440-22-4	Silver	8.1	บ		P_
7440-23-5	Sodium	30900_	_		P_
7440-28-0	Thallium_	0.70	<u></u>		F_
7440-62-2	Vanadium_	5.0	B		P_
7440-66-6	Zinc	26.0	_	U	P_
	Cyanide				NR
	-				

Color Be	fore: COLOR	LESS Clarit	y Before:	CLEAR_	Texture:	
lor Af	ter: COLOR	LESS Clarit	y After:	CLEAR_	Artifacts:	
comments	:					

## INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Name - DIGD THOOD		0002	V131M1FB
ab Name: PACE_INCOR	PORATED	Contract: EPC	l
ab Code:	Case No.:	SAS No.:	SDG No.: V131M1
atrix (soil/water):	WATER	Lab Sample	e ID: 3397.2
evel (low/med):	LOW	Date Rece	ived: 05/11/91
Solids:	o	•	

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

				Ţ	1		1
	CAS No.	Analyte	Concentration	c	Q	M	
	7429-90-5	Aluminum	195	ប៊		P	
	7440-36-0	Antimony_	0.80	U		F	I
i	7440-38-2	Arsenic	1.0	U	l ———	F	I
	7440-39-3	Barium	12.5	Ū	<del></del>	P	ı
	7440-41-7	Beryllium	1.1	U		p-	I
	7440-43-9	Cadmium	0.080	U		F	l
	7440-70-2	Calcium	448	U	<del></del>	P_	i
	7440-47-3	Chromium	9.5	U		P	I
1	7440-48-4	Cobalt	6.4	U		P	l
	7440-50-8	Copper	4.5	ָּט		P	I
	7439-89-6	Iron	97.7	U		P	l
ı	7439-92-1	Lead	0.60	B		F	ı
1	7439-95-4	Magnesium	509	บ		P	ı
١	7439-96-5	Manganese	1.5	ט		P	l
	7439-97-6	Mercury	0.20	ן ט		cv	l
1	7440-02-0	Nickel	8.6	U		P	l
1	7440-09-7	Potassium	760	ט		P	l
ł	7782-49-2	Selenium	0.50	ט		F	i
ł	7440-22-4	Silver	8.1	U		P	ĺ
١	7440-23-5	Sodium	390	ט		P_	ĺ
1	7440-28-0	Thallium	0.70	U		F	
١	7440-62-2	Vanadium	4.2	U		P	
1	7440-66-6	Zinc	16.0	8		P_	
1	_	Cyanide		1		NR	
ı				-			

Color Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
lor After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
Comments:						

		INORGANIC .	1 ANALYSES DATA	SHEE!	Г	EPA SAMPLE N
			(	0002	2 7	V131-C1
ab Name: PACI	E_INCORPORAT	ED	Contract: E	PC		
Tab Code:	Ca	se No.:	SAS No.	:	<del></del>	SDG No.: V13
ratrix (soil/v	water): WATE	R		Lab	Samp	le ID: 3999.9_
evel (low/med	i): LOW_	_		Date	e Rec	eived: 05/11/9
% Solids:		0				
Co	oncentration	Units (ug	/L or mg/kg dr	y wei	ight)	: UG/L_
	CAS No.	Analyte	Concentration	С	Q	м
	5.00.00			- -		<u> </u>
	7429-90-5			- -		NR
	7440-36-0	Antimony_		- -		NR
	7440-38-2	Arsenic Barium		- -		NR
	7440-39-3 7440-41-7			-		NR NR
	7440-43-9		· <del></del>	- -		NR NR
	7440-70-2			-		NR
	7440-47-3			- -		NR NR
	7440-48-4			-		NR
	7440-50-8	Copper		-		NR
	7439-89-6	Iron		- -		NR
	7439-92-1	Lead		- -		NR
	7439-95-4	Magnesium				NR
	7439-96-5	Manganese		- -		NR
	7439-97-6	Mercury				NR
		Nickel				NR
	7440-09-7	Potassium				NR
	7782-49-2					NR
	7440-22-4					NR
				_ _		NR
				_ _		NR
	7440-62-2	Vanadium_		_ _		NR
	7440-66-6	Zinc		_ _		NR
		Cyanide	10_	<u></u>		AS
Color Before:		Clarit	y Before:		··	Texture:
lor After:		Clarit	y After:			Artifacts:
Comments:						

# 1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00028	V131C1FB

ab Name: PA	CE_INCORPORAT	red	Contract: E	PC	VISICIFB
ab Code:	Ca	se No.:	SAS No.	:	SDG No.: V131M1
atrix (soil,	/water): WATE	ER		Lab Samp	le ID: 3400.6
evel (low/me	ed): LOW_			Date Rec	eived: 05/11/91
Solids:		_0			
C	Concentration	Units (ug	/L or mg/kg dr	y weight)	: UG/L_
	CAS No.	Analyte	Concentration	C Q	м
		.		_	
	•	Aluminum_		-	NR
	7440-36-0	Antimony_		-	NR
	7440-38-2	Arsenic_		-	NR
	7440-39-3 7440-41-7	Barium_ Beryllium		-	NR
		Cadmium		-	NR NR
	7440-70-2	Calcium		-	NR NR
	7440-47-3	Chromium		-	NR NR
	7440-48-4	Cobalt			NR
	7440-50-8	Copper			NR
	7439-89-6	Iron			NR
	7439-92-1	Lead			NR
	7439-95-4	Magnesium			NR
		Manganese		_]	NR
		Mercury		_	NR
		Nickel		_	NR
	1	Potassium		-]]	NR
		Selenium_		-	NR
		Silver Sodium		-	NR
		Thallium		-	NR NR
		Vanadium_		-	NR
	7440-66-6	Zinc		-	NR
		Cyanide_	10	<u>ט</u>	AS
	<del></del>	-1		-	
		1		- I I	
lor Before:		Clarit	y Before:		Texture:
lor After:		Clarit	y After:		Artifacts:
mments:					
					<del></del>

EPA SAMPLE NO.

	I	NORGANIC	ANALYSES DATA	SHEET	EIN DANIED NO.
- h W D10D	TUGODDODADA	_	Oznakova aka 1	00029	V140-M1
ab Name: PACE_	INCORPORATE	D	Contract: 1	EPC	
ab Code:	Cas	e No.:	SAS No	.:	SDG No.: V131M1
matrix (soil/wa	ater): WATER			Lab Sampl	e ID: 3415.4
evel (low/med)	: LOW			Date Rece	ived: 05/11/91
% Solids:	o				
Cor	centration	Units (ug	/L or mg/kg di	ry weight):	UG/L_
•	CAS NO	Analyte	Concentration		

			Γ	1	T .
CAS No.	Analyte	Concentration	С	Q	М
7429-90-5 7440-36-0 7440-38-2	Aluminum_ Antimony_ Arsenic	210_ 0.80_ 3.6_	_ U B		P_ F_ F
7440-39-3 7440-41-7 7440-43-9	Barium_ Beryllium Cadmium	28.0 1.1 0,2 0-18	D D		P P F
7440-70-2 7440-47-3 7440-48-4	CalciumChromiumCobalt	43800 9.5 6.4	น น		P   P   P
7440-50-8 7439-89-6 7439-92-1	Copper Iron	9.0 1750 0.70	A IA	<u></u>	P_ P_ F
7439-95-4 7439-96-5	Lead_ Magnesium Manganese	9970 1060	_ _ _ _		P_ P_
7439-97-6 7440-02-0 7440-09-7	Mercury Nickel Potassium	0.20_ 8.6_ 7230_	บ		P_ P_
7782-49-2 7440-22-4 7440-23-5	Selenium_ Silver Sodium	0.50_ 8.1_ 30100_	ט ט	_147_	F_ P_ P_
7440-28-0 7440-62-2 7440-66-6	Thallium_ Vanadium_ Zinc	0.70_ 4.2_ 30.0_	U U	7 4	F_ P_ P_
	Cyanide		-		NR

Color Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
lor After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	_
Comments:						
						-
						<del>-</del>

INORGANIC ANALYSES DATA SHEET

00030

ab Name: PACI	_ INCORPORAT	ED _	Contract: E	PC		V140-C1
ab Code:						SDG No.: V131M
trix (soil/w	vater): WATE	CR CR	•	La	b Samp	le ID: 3417.0
vel (low/med	l): LOW_	_		Da	te Rec	eived: 05/11/91
Solids:	<del></del>	0	•			
Co	ncentration	Units (ug	/L or mg/kg dry	y w	eight)	: UG/L_
	CAS No.	Analyte	Concentration	С	Q	М
	7429-90-5	Aluminum		- -		NR NR
	7440-36-0	Antimony_		- -		NR NR
	7440-38-2	Arsenic_		- -		NR
	7440-39-3	Barium	l <del></del>	- -		NR
	7440-41-7	Beryllium		- -		NR
	7440-43-9	Cadmium		- -		NR
	7440-70-2	Calcium_				NR
	7440-47-3	Chromium_				NR
	7440-48-4	Cobalt				NR
	7440-50-8	Copper		_ _		NR
	7439-89-6	Iron		_ _		NR
	7439-92-1	Lead		_ _		NR
		Magnesium		_ _		NR
		Manganese		_ _		NR
		Mercury		_ _		NR
		Nickel		-1-		NR
		Potassium		-1-		NR
		Selenium_		_ -		NR
		Silver		-1-		NR
		Sodium	<u></u>	- -		NR
		Thallium_ Vanadium		- -		NR
	1	Zinc		- -		NR NR
	7440-00-0	Cyanide	10	- -		AS
		Cyaniue	10	_ _		
or Before:		Clarit	y Before:			Texture:
or After:	<del></del>	Clarit	y After:			Artifacts:



#### DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA Samples Collected May 10, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233

# TRILLIUM

#### EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in Samples V131S1FS, V140S1FS, V131S1FD, or V140S1FD; bis(2-ethylhexyl)phthalate was detected in V131S1FB at 61 ppb. One unknown compound was found in V131S1FS and V131S1FD. No qualifiers have been applied to these reported results. One early-eluting unknown peak observed in V131S1FB-RE and V131S1FD has been rejected as a blank contaminant.

Problems identified on the Chain of Custody (COC) records include: (1) 9 COC's are included although only 2 are pertinent to this data package; (2) there is no "Relinquished by" signature; (3) the only transfer signature found does not include the affiliation of the person involved; (4) analysis parameters are listed in the "Matrix" column of the form, while "EPA 2/88" is recorded in the analysis request section; (5) the sampler name recorded at the top of the form includes only a first initial. The full name should be documented here; and (6) separate entries should not be made for MS/MSD samples.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation or the sample detection, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.



#### Case Narrative

Nine water samples (including separate samples for 2 matrix spike/matrix spike duplicate pairs) were collected on May 10, 1991 and received by Pace, Inc. on May 11, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

<u>Client ID</u>	<u>Lab ID</u>	<u>Collection Date</u>
V131S1FS	3390	5/10/91
V131S1FB	3391	5/10/91
V131S1FD	3392	5/10/91
V140S1FS	3411	5/10/91
V140S1FD	3412	5/10/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810511.503.



#### Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were in any way held in cold storage in the field, from the time of collection through shipment to and arrival at the laboratory. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case, since no positive results are reported for the samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria. The documentation of decafluorotriphenylphosphine (DFTPP) file D2631, run on 6/11/91, includes a total ion chromatogram for a <u>different</u> file (D2606). The retention times of the DFTPP are off slightly, and this caused some concern to the validator until the fact that they were from different runs became apparent. Care should be taken to include only <u>relevant</u> documentation in the data package to avoid similar confusion in the future.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. In several cases, areas for internal standard (IS) and/or surrogate peaks have also been manually integrated; these must be documented in the data package due to the potential effect on the reported results. The data in this SDG are not affected as no positive results are reported.

#### A. Initial

Samples V131S1FS, V131S1FB, V131S1FD, and V140S1FS were analyzed under an initial calibration (IC) performed on 6/11/91, on instrument 7001D. All criteria were met in this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 4-chloroaniline (36.2), hexachlorocyclopentadiene (34.3), 2,4,5-trichlorophenol (34.3), 2,6-dinitrotoluene (34.3), 4-nitroaniline (30.5), and 3,3'-dichlorobenzidine (45.0). No data are affected.

Samples V131S1FB-RE, V140S1FS-RE, and V140S1FD were analyzed under an IC performed on 6/17/91. All criteria were met in this calibration except the %RSD for 3-nitroaniline (37.8) and diethylphthalate (36.3). No data are affected.

#### B. Continuing

All samples run under the 6/11/91 IC were also run under a continuing calibration (CC) standard on 6/12/91. Criteria were met for this calibration with the exception of the Response Factor (RF) for 3,3'-dichlorobenzidine (0.048, criterion 0.050), and %D for benzoic acid (31.8), 2,4,5-trichlorophenol (28.5), and 3,3'-dichlorobenzidine (26.0). Detection limits for 3,3'-dichlorobenzidine are rejected in V131S1FS, V131S1FD, V131S1FB, and V140S1FS due to the low RF, indicating poor sensitivity to this compound. No other data are affected.

Samples V131S1FB-RE, V140S1FS-RE, and V140S1FD were run immediately following the IC on 6/17/91, without an additional CC standard. This is a valid procedure; no data are affected.

Both MS/MSD pairs were analyzed on 6/18/91 under a separate CC standard. All criteria were met in this calibration with the exception of the Percent Difference (%D) for bis(2-chloroisopropyl)ether (41.2), fluorene (28.9), 4-nitroaniline (29.9), 3,3'-dichlorobenzidine (37.8), and 2,4,6-tribromophenol (31.6). No data are affected. It is noted that the RRF recorded for bis(2-chloroisopropyl)ether on Form VII was incorrect, as was the %D; the value reported here is correct; the error has no additional effect on the data.

#### IV. Blanks

No target compounds were detected in SBLK1, extracted 5/15 and analyzed 6/17. No tentatively identified compounds were reported, however small peaks (below the reportable level) are observed early in the chromatogram, prior the first internal standard. Small peaks at the same relative retention time were reported in Samples V131S1FD (analyzed 6/12) and V131S1FB-RE (analyzed 6/17); these sample results have been rejected as blank contaminants.

Bis(2-ethylhexyl)phthalate was detected in the field blank, V131S1FB, at 61 ug/L. This compound was not detected in any other samples; no data are affected.

#### V. Surrogate Recovery

Recovery of nitrobenzene-d5 was low (23%) in V131S1FB (QC limits 35-114%). The remaining 5 surrogates were also relatively low, but were still within the QC limits. A re-analysis of the

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same extract of this sample gave a 35% recovery for nitrobenzened5, but 2-fluorobiphenyl fell to 38% (QC limits 43-116%). Again, all 6 surrogate recoveries are on the low side of the acceptable ranges. Re-extraction should have been performed but would have been well outside the 7-day holding time, minimizing its usefulness. It is possible that this sample was improperly spiked with the surrogate solution at the time of extraction, since it is a field blank and should not exhibit matrix problems. No data are affected; surrogate recoveries in all other samples were within the established criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample V131S1FS and Sample V140S1FS. Percent Recovery (%R) was slightly high for 2,4-dinitrotoluene in the MSD for each pair, at 108% and 103% (QC limits 24-96%). No data are affected.

Relative Percent Difference (RPD) values were high for phenol (actual 58, criterion 42), 2-chlorophenol (actual 48, criterion 40), 1,4-dichlorobenzene (actual 52, criterion 28), and 1,2,4-trichlorobenzene (actual 48, criterion 28) in V131S1FS MS/MSD and for pyrene (actual 35, criterion 31) in V140S1FS MS/MSD. No data are qualified.

#### VII. Field Duplicates

Two field duplicate pairs were analyzed in this SDG. In V131S1FS and V131S1FD, no target analytes were detected; an unknown peak at 19.5 minutes was detected in both samples at the same estimated concentration. No target or unknown compounds were detected in V140S1FS and V140S1FD.

#### VIII. Internal Standards Performance

Areas for 4 of the 6 internal standards were below the minimum acceptable area for V131S1FB and V140S1FS; both these samples were analyzed on 6/12/91. Reruns of original extracts of these samples were performed on 6/17/91; in both cases, the area for d10-phenanthrene was slightly above the acceptable limit. No data are qualified.

#### IX. TCL Compound Identification

Compound identifications are properly reported and documented in all cases.



#### X. Compound Quantitation and Reported Detection Limits

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

#### XI. Tentatively Identified Compounds

One early-eluting TIC was rejected in Sample V131S1FB-RE and in Sample V131S1FD due to observation of a similar peak at the same retention time in both the field blank and SBLK1. One reportable TIC is appropriately listed as "Unknown" in Samples V131S1FS and V131S1FD.

#### XII. System Performance

System performance was marginal in the analyses performed on 6/11-12, as evidenced by the numerous manually integrated areas in the standards, the low RF observed in the CC standard, and by the relatively low internal standard areas observed in all the samples run on these dates (even those that remained within the limits were on the low side of the ranges). It is apparent that the column was changed prior to the IC on 6/17/91, as the retention times are considerably later in these runs and resolution is improved. Where re-analysis data are available, it is recommended that it be used in favor of original data from 6/12, based on the improved system performance on the later analysis date.

#### XIII. Overall Assessment

Sample results are usable as reported with the exception of the following qualifications:

- 1. The TIC peak reported in V131S1FD and V131S1FB-RE has been rejected as a blank contaminant.
- 2. Results for 3,3'-dichlorobenzidine have been rejected in V131S1FS, V131S1FD, V131S1FB, and V140S1FS.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:

1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.

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- 2. Transfer signatures are incomplete: no "Relinquished by" signature is present, and the single "Accepted by" signature does not include the affiliation of the person involved.
- 3. Analysis parameters (e.g., VOC, SVOC) are recorded in the column labelled "Matrix"; entries here should be water, soil, etc.
- 4. Signature and written name of the sampler at the top of the form should be a <u>full</u> name, not first initial only.
  - 5. Cold storage is not documented.
- 6. MS/MSD analyses are a <u>laboratory-initiated</u> quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used and to confirm that the integration was consistent in both standards and samples, where applicable. This is especially important when areas for internal standards and/or surrogates are affected.

COE

#### 7B BEMIVOLATILE CONTINUING CALIBRATION CHECK

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

nstrument ID: 7001D Calibration Date: 6/12/91 Time: 9:03

Lab File ID: D2647 Init. Calib. Date(s): 6/11/91 6/11/91

in RRF50 for BPCC(#) = .050

Max %D for CCC(\*) is 25.0%

COMPOUND	RRF	RRF50	%D
	=====		
Phenol	1.899		
bis(2-Chloroethyl)ether	1.649		
2-Chlorophenol	1.563	1.579	1.0
1,3-Dichlorobenzene	1.451		
1,4-Dichlorobenzene	1.505		
Benzyl alcohol	1.196	1.149	,
1,2-Dichlorobenzene	1.517	1.476	2.7
2-Methylphenol	1.644	1.639	. 3
bis(2-Chloroisopropyl) ether	3.464	3.033	12.4
4-Methylphenol	1.922		3.2
N-Nitroso-di-n-propylamine_	2.180	1.930	11.5
Hexachloroethane	.853	.890	4.3
Nitrobenzene	.636	.583	8.3
Isophorone	1.369		3.5
2-Nitrophenol	.356	.315	11.7
2,4-Dimethylphenol	.491	.556	13.2
Benzoic acid	.579	.395	31.8
bis(2-Chloroethoxy) methane	.567	.552	2.6
2,4-Dichlorophenol	.285	.290	1.9
1,2,4-Trichlorobenzene	.396	.317	19.9
Naphthalene	1.207	1.252	3.7
4-Chloroaniline	.265	.241	9.0
Kexachlorobutadiene	.301	.263	12.9
4-Chloro-3-methylphenol	.629	.562	10.6
2-Methylnaphthalene	.959	.916	4.5
Hexachlorocyclopentadiene	.273	.338	23.7
2,4,6-Trichlorophenol	.370	.414	12.2
2,4,5-Trichlorophenol	.307	.394	28.5
2-Chloronaphthalene	.825	1.030	24.9
2=Nitroaniline	.476	.520	
Dimethylphthalate	1.363	1.532	12.4
Acenaphthylene	1.545	1.766	14.3
2,6-Dinitrotoluene	.299	.367	23.0
3-Nitroaniline	.222	.214	3.3
Acenaphthene	.939	1.162	23.7
2,4-Dinitrophenol		.123	10.0
	.127	.120	4.9
4-Nitrophenol	/	7 1	

#### 7C BEMIVOLATILE CONTINUING CALIBRATION CHECK

Received 7/5/91 CaE

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Instrument ID: 7001D Calibration Date: 6/12/91 Time: 9:03

Lab File ID: D2647

Init. Calib. Date(s): 6/11/91 6/11/91

Min RRF50 for BPCC(#) = .050

Max %D for CCC(\*) is 25.0%

			<del>,                                    </del>
COMPOUND	RRF	RRF50	*D_
	======	=====	=====
Dibenzofuran	1.372	1.584	15.5
2,4-Dinitrotoluene	.403	.449	11.2
Disthylphthalate	1.427	1.646	15.4
4-Chlorophenyl-phenylether_	.496	.557	12.4
Fluorene	1.027	1.183	15.2
4-Nitroaniline	.158	.137	13.0
4,6-Dinitro-2-methylphenol	.159	.158	. 6
N-Nitrosodiphenylamine	.390	.451	15.7
4-Bromophenyl-phenylether	.271	.282	4.3
Hexachlorobenzene	.350	.342	2.4
Pentachlorophenol	.179	.140	21.9
Phenanthrene	1.116	1.172	4.9
Anthracene	1.001	1.106	10.4
Di-n-butylphthalate	1.351	1.502	11.2
Fluoranthene	.783	.744	5.0
Pyrene	2.492	2.671	72
Butylbenzylphthalate	1.076	1.226	13.9
3,3'-Dichlorobenzidine	.064	.048	26.0
Benzo(a) anthracene	1.202	1.228	2.2
Chrysene	1.137	1.200	5.5
bis(2-Ethylhexyl)phthalate	1.374	1.551	12.9
Di-n-octylphthalate	2.943	3.208	9.0
Benzo(b) fluoranthene	1.418	1.346	5.1
Benzo(k) fluoranthene	1.133	1.171	3.3
Benzo(a) pyrene	1.103	1.080	2.1
Indeno(1,2,3-cd)pyrene	.746	.791	6.1
Dibenzo (a, h) anthracene	.715	.773	8.1
Benzo(g,h,i)perylene	.788	.839	6.4
	1001	1037	
Nitrobenzene-d5	.644	.600	6.8
2-Fluorobiphenyl	.770	.884	14.9
Perphenyl-dl4	1.327	1.395	5.2
Phenol-d6	1.988	2.078	4.6
2-Fluorophenol	1.463	1.430	2.2
2,4,6-Tribromophenol	.177	.098	44.7
· Lala - vr Thromobileinor	• • • • • •	. 030	44./

(1) Cannot be separated from Diphenylamine

FORM VII SV-2

A SAMPLE NO.

SEMIVOLALLE ORGANICS ANALYSIS DATA SHEET

V131S1FB

ab Name: PACE Contract:

Tab Code: PACE Case No.: EPC SAS No.: SDG No.:

Lab Sample ID: 3391.3 0000 30 Matrix: (soil/water) WATER

Lab File ID: D2656 ;ample wt/vol: 1000. (g/mL) ML

Level: (low/med) LOW Date Received: 5/11/91

Moisture: not dec.100. Date Extracted: 5/15/91 dec. 0.

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

Dilution Factor: PC Cleanup: (Y/N) N pH: 7.0 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND (ug/L or ug	g/kg/ UG/L	<b>x</b>
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	ט
95-57-8	2-Chlorophenol	10.	U
541-73-1	1.3-Dichlorobenzene	10.	U
106-46-7	1,3-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	ט
95-50-1	1.2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	bis(2-Chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2.4-Dichlorophenol	10.	U
120-82-1	1.2.4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	ָן U
77-47-4	Hexachlorocyclopentadiene	<u>1</u> 0	TT
88-06-2	2,4,6-Trichlorophenol	10.	υ
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	Ū

SEMIVOLA' LE ORGANICS ANALYSIS DATA SHEET

V131S1FB

ab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3391.3

Sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2656

0000 31

evel: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

dec. 0.

Date Extracted: 5/15/91

\_xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

FPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

99-09-2----3-Nitroaniline 50. U 83-32-9----Acenaphthene 10. U 51-28-5----2,4-Dinitrophenol \_\_\_ 50. U U 100-02-7----4-Nitrophenol 50. 132-64-9-----Dibenzofuran 10. U 121-14-2----2,4-Dinitrotoluene\_ 10. U 84-66-2----Diethylphthalate U 10. 7005-72-3----4-Chlorophenyl-phenylether U 10. 86-73-7----Fluorene U 10. 100-01-6-----4-Nitroaniline 50. U 534-52-1----4,6-Dinitro-2-methylphenol\_ U 50. 86-30-6----N-Nitrosodiphenylamine U 10. 101-55-3----4-Bromophenyl-phenylether U 10. 118-74-1-----Hexachlorobenzene 10. U 87-86-5----Pentachlorophenol U 50. 85-01-8----Phenanthrene\_ 10. IJ 120-12-7-----Anthracene U 10. 84-74-2----Di-n-butylphthalate 10. U 206-44-0----Fluoranthene\_ บ 10. 129-00-0----Pyrene U 10. 85-68-7-----Butylbenzylphthalate U 10. R 91-94-1----3,3'-Dichlorobenzidine Ü 20. CAE 2/8/91 56-55-3----Benzo(a) anthracene\_ U 10. 218-01-9----Chrysène 10. U 117-81-7----bis(2-Ethylhexyl)phthalate 61. 117-84-0-----Di-n-octylphthalate IJ 10. 205-99-2----Benzo(b) fluoranthene 10. ŢŢ 207-08-9----Benzo(k) fluoranthene 10. U 50-32-8----Benzo(a)pyrene 10. U 193-39-5----Indeno(1,2,3-cd)pyrene\_ U 10. 53-70-3----Dibenzo(a,h)anthracene U 10. 191-24-2----Benzo(g,h,i)perylene\_ 10. U

(1) - Cannot be separated from diphenylamine

FORM I SV-2

# SEMIVOLA" LE ORGANICS ANALYSIS DATA SHEET

TEN\_ATIVELY IDENTIFIED COMPOUNDS V131S1FB

ab Name: PACE

Contract:

ab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

latrix: (soil/water) WATER

Lab Sample ID: 3391.3

Sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2656

0000 32

evel: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

dec. 0.

Date Extracted: 5/15/91

\_xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

TPC Cleanup:

(Y/N) N

pH: 7.0

Dilution Factor:

Number TICs found:

0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
1				
3				
5.				
7.		-		
9.				
11.				
13.				
15				
17.				
19.				
21				
23.				
25.				
28				
30.				
		.		

FORM I SV-TIC

## SEMIVOLA.\_LE ORGANICS ANALYSIS DATA SHEET

V131S1FB R∈

RLE 6/2

ab Name: PACE Contract:

Tab Code: PACE Case No.: EPC SAS No.: SDG No.:

Lab Sample ID: 3391.3RE .Matrix: (soil/water) WATER

1000. (g/mL) ML Gample wt/vol: Lab File ID: D2686

Date Received: 5/11/91 Level: (low/med) LOW

Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/17/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

108-95-2	Phenol			10.	ט
111-44-4	bis(2-Chloroethy	(1)ether		10.	U
95-57-8	2-Chlorophenol	<del></del>		10.	U
541-73-1	1,3-Dichlorobenz	ene		10.	U
! 106-46-7	1.4-Dichlorobena	zene		10.	U
100-51-6	Benzyl alcohol_			10.	ַ
95-50-1	1,2-Dichlorobena	ene		10.	U
95-48-7	2-Methylphenol_			10.	U
108-60-1	bis(2-Chloroison	ropyl) ethe	r	10.	ט
106-44-5	4-Methylphenol_	'	- 1	10.	U
621-64-7	N-Nitroso-di-n-r	ropylamine		10.	U
67-72-1	Hexachloroethane	·		10.	U
98-95-3	Nitrobenzene			10.	U
78-59-1	Isophorone			10.	U
88-75-5	2-Nitrophenol			10.	U
105-67-9	2,4-Dimethylpher	ol		10.	U
65-85-0	Benzoic acld			50.	ַ
111-91-1	bis(2-Chloroetho	xy) methane		10.	U
120-83-2	2,4-Dichlorophen	ol		10.	U
120-82-1	1,2,4-Trichlorob	enzene		10.	U
91-20-3	Naphthalene		i	10.	U
106-47-8	4-Chloroaniline			10.	ט
87-68-3	Hexachlorobutadi	ene	1	10.	U
59-50-7	4-Chloro-3-methy	lphenol		10.	U
91-57-6	2-Methylnaphthal	ene		10.	U
77-47-4	Hexachlorocyclop	entadiene .	!	วิก	ΙŢ
88-06-2	2,4,6-Trichlorop	henol		10.	U
95-95-4	2,4,5-Trichlorop	henol		50.	Ü
91-58-7	2-Chloronaphthal	ene		10.	Ŭ
88-74-4	2-Nitroaniline		<u></u> }	50.	U
131-11-3	Dimethylphthalat	e	[	10.	U
208-96-8	Acenaphthylene		l	10.	U
606-20-2	2,6-Dinitrotolue	ne		10.	U

### SEMIVOLAT LE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Q

V131S1FBRE 6125/4

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

(atrix: (soil/water) WATER Lab Sample ID: 3391.3 & black for each

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2686

evel: (low/med) LOW Date Received: 5/11/9100 38

% Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/17/91

-PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

99-09-23-Nitroaniline	50.	U
83-32-9Acenaphthene	10.	U
51-28-52,4-Dinitrophenol	50.	U
100-02-74-Nitrophenol	50.	U
132-64-9Dibenzofuran	10.	U
121-14-22,4-Dinitrotoluene	10.	ט
84-66-2Diethylphthalate	10.	U
7005-72-34-Chlorophenyl-phenylether	10.	U
86-73-7Fluorene	10.	U
100-01-64-Nitroaniline	50.	U
534-52-14,6-Dinitro-2-methylphenol	50.	U
86-30-6N-Nitrosodiphenylamine	10.	U
101-55-34-Bromophenyl-phenylether	10.	U
118-74-1Hexachlorobenzene	10.	U
87-86-5Pentachlorophenol	50.	U
85-01-8Phenanthrene	10.	ַ
120-12-7Anthracene	10.	U
84-74-2Di-n-butylphthalate	10.	U
206-44-0Fluoranthene	10.	U
129-00-0Pyrene	10.	U
85-68-7Butylbenzylphthalate	10.	U
91-94-13,3'-Dichlorobenzidine	20.	U
56-55-3Benzo(a)anthracene	10.	U
218-01-9Chrysene	10.	U
117-81-7bis(2-Ethylhexyl)phthalate	48.	1
117-84-0Di-n-octvlphthalate	10.	IJ
205-99-2Benzo(b) fluoranthene	10	11
207-08-9Benzo(k) fluoranthene	l 10.	טו
50-32-8Benzo(a)pyrene	10.	Ū
193-39-5Indeno(1.2.3-cd)pyrene	10.	Ū
53-70-3Dibenzo(a,h)anthracene	10.	Ū
191-24-2Benzo(g,h,i)perylene	10.	Ū
		Ì
) - Cannot be senarated from diphenylamine		

(1) - Cannot be separated from diphenylamine

FORM I SV-2

#### SEMIVOLATTLE ORGANICS ANALYSIS DATA SHEET TE. ATIVELY IDENTIFIED COMPOUNDS

V131S1FB RE 6/25/

EPA SAMPLE NO.

ab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:0000 39

fatrix: (soil/water) WATER

Lab Sample ID: 3391.3RE

6/25/4

RLE

Sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2686

evel: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Extracted: 5/15/91

xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

CPC Cleanup: (Y/N) N

pH: 7.0

0.

dec.

Dilution Factor:

1.00

Number TICs found: 1

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	UNKNOWN	7.39	10.	J
3	Same peak visible	W. SVBI		
5		cae	3 5 91	
7. 8				
9 10 11.				
12.				
14.				
16. 17. 18.				
20.				
22.				
23. 24. 25.				
27.				
29.				
30				

1/87 Rev.

FORM I SV-TIC

V131S1FD

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

..atrix: (soil/water) WATER Lab Sample ID: 3392.1

Tample wt/vol: 1000. (g/mL) ML Lab File ID: D2657 000046

Level: (low/med) LOW Date Received: 5/11/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

108-95-2	Phenol	10 %.	ZO.	المال
111-44-4	bis(2-Chloroethyl)ether	10.	U	0,0
95-57-8	2-Chlorophenol	10.	U	1
	1,3-Dichlorobenzene	10.	U	1
106-46-7	1,4-Dichlorobenzene	10.	ט	1
100-51-6	Benzyl alcohol	10.	ט	}
95-50-1	1,2-Dichlorobenzene	10.	טן	}
95-48-7	2-Methylphenol	10.	U	1
108-60-1	bis(2-Chloroisopropyl)ether	10.	U	1
106-44-5	4-Methylphenol	10.	U	1
621-64-7	N-Nitroso-di-n-propylamine	10.	ט	1
67-72-1	Hexachloroethane	10.	U	
98-95-3	Nitrobenzene	10.	ט(	)
78-59-1	Isophorone	10.	ט	
88-75-5	2-Nitrophenol	10.	ט	1
105-67-9	2,4-Dimethylphenol	10.	U	1
65-85-0	Benzoic acid	50.	U	ł
111-91-1	bis(2-Chloroethoxy) methane	10.	ט	1
120-83-2	2.4-Dichlorophenol	10.	U	Į
120-82-1	1.2.4-Trichlorobenzene	10.	ט	1
91-20-3	Naphthalene	10.	U	1
106-47-8	4-Chloroaniline	10.	ט	]
87-68-3	Hexachlorobutadiene	10.	טו	1
59-50-7	4-Chloro-3-methylphenol	10.	ט	1
91-57-6	2-Methylnaphthalene	10.	U	1
77-47-4	Hexachlorocyclopentadiene	10.	TT	1
88-06-2	2,4,6-Trichlorophenol	10.	ט	}
95-95-4	2,4,5-Trichlorophenol	50.	ប	(
91-58-7	2-Chloronaphthalene	10.	U	ĺ
88-74-4	2-Nitroaniline	50.	Ū	1
131-11-3	Dimethylphthalate	10.	Ü	J
208-96-8	Acenaphthylene	10.	Ü	1
606-20-2	2,6-Dinitrotoluene	10.	Ŭ	)

FPA SAMPLE NO.

V131S1FD

0000 47

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

atrix: (soil/water) WATER Lab Sample ID: 3392.1

Lab File ID: D2657 Sample wt/vol: 1000. (g/mL) ML

evel: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

\_xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

TPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	(ug/L or ug/	/Kg) UG/L	Q	
99-09-2	3-Nitroanilin	<b>e</b>	50.	U	-
	Acenaphthene_	~	10.	Ü	
51-28-5	2,4-Dinitroph	enol	50.	Ū	1
100-02-7	4-Nitrophenol		50.	ΰ	1
132-64-9	Dibenzofuran		10.	Ū	1
	2,4-Dinitroto	luene	10.	Ū	l
84-66-2	Diethylphthal	ate	10.	Ū	1
7005-72-3	4-Chloropheny	1-phenylether	10.	Ü	ì
86-73-7	Fluorene		10.	Ū	
	4-Nitroaniling	e	50.	Ū	}
	4,6-Dinitro-2		50.	Ū	
86-30-6	N-Nitrosodiph	envlamine	10.	Ū	1
101-55-3	4-Bromophenyl	-phenylether	10.	Ū	}
118-74-1	Hexachloroben	zene	10.	U	
87-86-5	Pentachloroph	enol	50.	U	
85-01-8	Phenanthrene_		10.	U	1
120-12-7	Anthracene		10.	U	[
84-74-2	Di-n-butylphtl	nalate	10.	U	l
206-44-0	Fluoranthene		10.	U	1
129-00-0	Pyrene		10.	ប	}
85-68-7	Butylbenzylphi	thalate	10.	U	}
91-94-1	3.37-Dichlorol	penzidine	20.	to R	CAE 2/5/41
{ 56-55-3 <i></i> -	Benzo(a)anthra	acene	10.	ט	10-215 191
218-01-9	Chrvsene		10.	ប	1
117-81-7	bis(2-Ethylhe)	(yl)phthalate	10.	U	1
117-84-0	Di-n-octylphtl	nalate	10.	ប	}
205-99-2	Benzo(b)fluora	nithelie l	10.	U	<u> </u>
207-08-9	Benzo(k)fluora	inthene	10.	U	1
50-32-8	Benzo(a)pyrene		10.	U	l
193-39-5	Indeno(1,2,3-c	d) pyrene	10.	ľŪ	[
53-70-3	Dibenzo(a,h)ar	thracene	10.	U	1
191-24-2	Benzo(g,h,i)pe	rylene	10.	U	
'				İ	l
(1) - Cannot be	separated from c	liphenylamine			

1F

EPA SAMPLE NO.

# SEMIVOLA" 'E ORGANICS ANALYSIS DATA SHEET TENLATIVELY IDENTIFIED COMPOUNDS

V131S1FD

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

atrix: (soil/water) WATER Lab Sample ID: 3392.1

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2657 000048

evel: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

TPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
2 UN	KNOWN	19.46	8.	J
5	Some peak in SBLKI, FB.	2 2 3 9 1		
8				
2				
4. 5. 6. 7.				
9				
1. 2. 3. 4.				
6. 7.				
8				

FORM I SV-TIC

#### 18 SEMIVOLAL\_LE ORGANICS ANALYSIS DATA SHEET

V131S1FS Contract:

\_ab Name: PACE

Tab Code: PACE Case No.: EPC SAS No.: SDG No.:

matrix: (soil/water) WATER Lab Sample ID: 3390.5 0000 56

1000. (g/mL) ML Lab File ID: D2655 ample wt/vol:

Level: (low/med) LOW Date Received: 5/11/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

CC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

		(49/1 01			
108-95-2	Phenol			10.	U
111-44-4	bis(2-Chloroeth	yl)ether	— I	10.	U
95-57-8	2-Chlorophenol			10.	U
541-73-1	1,3-Dichloroben	zene		10.	U
106-46-7	1,4-Dichloroben	zene		10.	U
100-51-6	Benzyl alcohol_			10.	U
95-50-1	1,2-Dichloroben	zene		10.	U
95-48-7	2-Methylphenol_			10.	U
108-60-1	bis(2-Chloroiso	propyl)ethe	r	10.	U
106-44-5	4-Methylphenol_			10.	U
621-64-7	N-Nitroso-di-n-	propylamine		10.	U
67-72-1	Hexachloroethan	9		10.	U
98-95-3	Nitrobenzene		_	10.	U
78-59-1	Isophorone			10.	U
88-75-5	2-Nitrophenol			10.	U
105-67-9	2,4-Dimethylpher	nol		10.	U
65-85-0	Benzoic acid		i	50.	טן
111-91-1	bis(2-Chloroetho	oxy) methane		10.	U
120-83-2	2.4-Dichloropher	ol	{	10.	U
120-82-1	1.2.4-Trichlorob	enzene	<del>-</del> i	10.	U
91-20-3	Naphthalene			10.	U
106-47-8	4-Chloroaniline			10.	U
87-68-3	Hexachlorobutadi	ene	{	10.	U
59-50-7	4-Chloro-3-methy	lphenol	(	10.	U
91-57-6	2-Methylnaphthal	ene		10.	U
77-47-4	Hexachlorocyclor	entadiene		10.	U
88-06-2	2,4,6-Trichlorop	henol		10.	U
95-95-4	2,4,5-Trichloror	henol	_	50.	U
91-58-7	2-Chloronaphthal	ene	_	10.	U
88-74-4	2-Nitroaniline			50.	U
131-11-3	Dimethylphthalat	e	_	10.	U
208-96-8	Acenaphthylene_		_	10.	U
606-20-2	2,6-Dinitrotolue	ne		10.	U

SEMIVOLA" LE ORGANICS ANALYSIS DATA SHEET

V131S1FS

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

latrix: (soil/water) WATER Lab Sample ID: 3390.000 57

Lab File ID: D2655 Sample wt/vol: 1000. (g/mL) ML

evel: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

\_xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

TPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or u	ıg/Kg)	UG/L	(	Q	
99-09-2	3-Nitroaniline		50.	U		
83-32-9	Acenaphthene	-1	10.	บั	_	}
51-28-5	2,4-Dinitrophenol	-	50.	Ŭ		]
100-02-7	4-Nitrophenol	-	50.	Ū		
132-64-9	Dibenzofuran	-	10.	บ		
	2,4-Dinitrotoluene	-	10.	บั		•
84-66-2	Diethylphthalate	-	10.	Ū		ŀ
7005-72-3	4-Chlorophenyl-phenylether	<b>~</b>	10.	Ū		}
86-73-7	Fluorene	-	10.	Ū		
100-01-6	4-Nitroaniline	}	50.	Ū		
534-52-1	4,6-Dinitro-2-methylphenol	-	50.	Ū		
86-30-6	N-Nitrosodiphenylamine		10.	Ü		
101-55-3	4-Bromophenyl-phenylether		10.	Ü		
118-74-1	Hexachlorobenzene	-	10.	U		
87-86-5	Pentachlorophenol	-	50.	Ū		
85-01-8	Phenanthrene	-1	10.	Ū	}	
120-12-7	Anthracene	-	10.	U		
84-74-2	Di-n-butylphthalate	-1	10.	U	}	
206-44-0	Fluoranthene	-	10.	ט	1	
129-00-0	Pyrene	-	10.	U	Į	
85-68-7	Butylbenzylphthalate	-	10.	177	_	
91-94-1	3,3'-Dichlorobenzidine	-	<del>-20</del>	11	RI	
56-55-3	Benzo(a)anthracene	-	10.	U	` [	cae 715
218-01-9	Chrysene	-	10.	Ū	- 1	,
117-81-7	bis(2-Ethylhexyl)phthalate_	-	10.	Ū	1	
117-84-0	Di-n-octylphthalate	-)	10.	Ū	1	
205-99-2	Benzo(b) fluoranthene	-1	10.	Ū	}	
207-08-9	Benzo(k) fluoranthene	-1	10.	Ū	}	
50-32-8	Benzo(a)pyrene	-1	10.	Ŭ	]	
193-39-5	Indeno(1,2,3-cd)pyrene	-1	10.	Ü	ļ	
53-70-3	Dibenzo(a,h)anthracene	-	10.	บั	}	
191-24-2	Benzo(g,h,i)perylene	-	10.	Ŭ	}	
		-1		Ì		
- Cannot be	e separated from diphenylamine			,		

FORM I SV-2

# SEMIVOLAT LE ORGANICS ANALYSIS DATA SHEET TEL ATIVELY IDENTIFIED COMPOUNDS

V13151FS

EPA SAMPLE NO.

ab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

Lab Sample ID: 3390.5000 58

atrix: (soil/water) WATER

Sample wt/vol:

1000.

(g/mL) ML

Lab File ID: D2655

evel: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

dec. 0.

Date Extracted: 5/15/91

xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/12/91

TPC Cleanup:

(Y/N) N

pH: 7.0

Dilution Factor:

1.00

Number TICs found: 1

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	иикиоми	19.46	100.	J
3				
5				
7				
8				
10.				
12.				
13.				
16.				
18.				
20.				
21.				
23.				
25.				
26. 27.				
29.				
30				

V140S1FD

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3412.0

ample wt/vol: 1000. '(g/mL) ML Lab File ID: D2689 0000 65

Level: (low/med) LOW Date Received: 5/11/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/18/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	(ug/L or		00/1	¥
108-95-2	Phenol			10.	U
	bis(2-Chloroeth	yl)ether		10.	U
95-57-8	2-Chlorophenol			10.	U
541-73-1	1,3-Dichloroben	zene		10.	U
106-46-7	1,4-Dichloroben	zene	<del></del> ]	10.	U
100-51-6	Benzyl alcohol		<u> </u>	10.	U
95-50-1	1,2-Dichloroben	zene	<del></del>	10.	U
95-48-7	2-Methylphenol	\ <u></u> ,		10.	U
108-60-1	bis(2-Chloroiso	propyl)ethe	er	10.	U
106-44-5	4-Methylphenol		ł	10.	U
621-64-7	N-Nitroso-di-n-	propylamine	<u> </u>	10.	U
67-72-1	Hexachloroethan	ė	— I	10.	U
98-95-3	Nitrobenzene		<del></del>	10.	U
78-59-1	Isophorone			10.	U
88-75-5	2-Nitrophenol		_	10.	U
105-67-9	2,4-Dimethylphe	nol		10.	U
65-85-0	Benzoic acid			50.	U
111-91-1	bis(2-Chloroeth	oxy) methane	_	10.	U
120-83-2	2.4-Dichlorophe	nol		10.	ַט
120-82-1	1.2.4-Trichloro	benzene		10.	U
91-20-3	Naphthalene		— I	10.	U
106-47-8	4-Chloroaniline			10.	U
87-68-3	Hexachlorobutad	iene		10.	U
59-50-7	4-Chloro-3-meth	ylphenol		10.	U
91-57-6	2-Methylnaphtha	lene		10.	U
77-47-4	Hexachlorocyclo	pentadiene	—	10.	lπ .
88-06-2	2,4,6-Trichloro	ohenol	<del></del>	10.	U
95-95-4	2.4.5-Trichloro	ohenol	<b>—</b>	50.	U
91-58-7	2-Chloronaphthal	lene		10.	U
88-74-4	2-Nitroaniline			50.	U
131-11-3	Dimethylphthalat	te	<del>-</del>	10.	Ū
208-96-8	Acenaphthylene_	<del></del>	<b>—</b> 1	10.	U
606-20-2	2,6-Dinitrotolue	ene	<del>-</del>	10.	U

V140S1FD

ab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

atrix: (soil/water) WATER

Sample wt/vol:

1000. (g/mL) ML

Lab File ID: D268900 66

Lab Sample ID: 3412.0

evel: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

\_xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/18/91

TPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

CAS NO.	COMPOUND (U.	3/ H OI	ug/ kg)	- OG/ L	
99-09-2	3-Nitroaniline			50.	U
83-32-9	Acenaphthene 2,4-Dinitrophenol _		<del></del>	10.	ט
51-28-5	2,4-Dinitrophenol			50.	U
100-02-7	4-Nitrophenol			50.	U
132-64-9	Dibenzofuran			10.	U
121-14-2	2,4-Dinitrotoluene_			10.	U
84-66-2	Diethylphthalate			10.	U
7005-72-3	4-Chlorophenyl-pheny	<i>l</i> ether	•	10.	U
86-73-7	Fluorene	•		10.	U
100-01-6	4-Nitroaniline			50.	שׁ
534-52-1	4.6-Dinitro-2-methy	phenol		50.	U
86-30-6	N-Nitrosodiphenylami	.ne	_	10.	ט
101-55-3	4-Bromophenvl-pheny)	.ether	<del></del>	10.	ט
118-74-1	Hexachlorobenzene		_	10.	U
87-86-5	Pentachlorophenol		_	50.	U
85-01-8	Phenanthrene			10.	ַ
120-12-7	Anthracene			10.	שׁ
84-74-2	Di-n-butylphthalate		<del>-</del>	10.	U
206-44-0	Fluoranthene		_	10.	U
129-00-0	Pvrene			10.	U
85-68-7	Butylbenzylphthalate			10.	U
91-94-1	3.3'-Dichlorobenzidi	ne		20.	U
56-55-3	Benzo(a)anthracene			10.	U
218-01-9	Chrysène			10.	ט
117-81-7	bis(2-Ethylhexyl)pht	halate	_	10.	U
117-84-0	Di-n-octylphthalate			10.	U
205-99-2	Benzo(b)fluoranthene		!	10.	Ū
207-08-9	Benzo(k)fluoranthene		<b>-</b>	10.	U
50-32-8	Benzo(a)pyrene			10.	U
193-39-5	Indeno(1,2,3-cd)pyre	ne	_	10.	U
53-70-3	Dibenzo(a,h)anthrace	ne		10.	U
191-24-2	Benzo(g,h,i)perylene			10.	U
) - Cannot be	separated from dipheny	lamine			

FORM I SV-2

EPA SAMPLE NO.

SEMIVOLA' LE ORGANICS ANALYSIS DATA SHEET TEN\_ATIVELY IDENTIFIED COMPOUNDS

V140S1FD

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

atrix: (soil/water) WATER Lab Sample ID: 3412.0

Lab File ID: D2689 0000 67 1000. (g/mL) ML Sample wt/vol:

evel: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

\_xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/18/91

PC Cleanup: (Y/N) N Dilution Factor: 1.00 pH: 7.0

CONCENTRATION UNITS: Number TICs found: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
3 ·				
7				
9.				
12.				
14. 15. 16.				
18.				
20.				
23.				
26.				
27. 28. 29.				
30.				

#### 1B SEMIVOLA'LLE ORGANICS ANALYSIS DATA SHEET

V140S1FS

ab Name: PACE

Contract:

Tab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3411 9000 71

ample wt/vol: 1000. (g/mL) ML Lab File ID: D2658

Level: (low/med) LOW Date Received: 5/11/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/12/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

108-95-2	Phenol	10.	บ
	bis(2-Chloroethyl)ether	10.	ט
95-57-8	2-Chlorophenol	10.	U
	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	bis(2-Chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	ט
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2.4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	ט
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1.2.4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	Ü
91-57-6	2-Methylnaphthalene	10.	¦♥
77-47-4	Hexachlorocyclopentadiene	10.	្រុំប្រ
88-06-2	2,4,6-Trichlorophenol	10.	ט
95-95-4	2.4.5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	ט
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

V140S1FS

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 000072

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2658

evel: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

TPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q 99-09-2----3-Nitroaniline 50. 83-32-9-----Acenaphthene 10. U 51-28-5----2,4-Dinitrophenol \_ U 50. 100-02-7----4-Nitrophenol U 50. 132-64-9-----Dibenzofuran U 10. 121-14-2----2,4-Dinitrotoluene\_ 10. U 84-66-2----Diethylphthalate U 10. 7005-72-3----4-Chlorophenyl-phenylether U 10. 86-73-7----Fluorene U 10. 100-01-6-----4-Nitroaniline 50. U 534-52-1----4,6-Dinitro-2-methylphenol\_ U 50. 86-30-6----N-Nitrosodiphenylamine U -10. 101-55-3----4-Bromophenyl-phenylether U 10. 118-74-1-----Hexachlorobenzene 10. U 87-86-5-----Pentachlorophenol U 50. 85-01-8----Phenanthrene U 10. 120-12-7----Anthracene U 10. 84-74-2----Di-n-butylphthalate U 10. 206-44-0----Fluoranthene\_ U 10. 129-00-0----Pyrene U 10. 85-68-7----Butylbenzylphthalate 91-94-1----3,3'-Dichlorobenzidine U 10. <del>-20.</del> ca82/5/91 56-55-3----Benzo(a) anthracene\_ 10. U 218-01-9-----Chrysene 10. U 117-81-7----bis(2-Ethylhexyl)phthalate U 10. 117-84-0-----Di-n-octylphthalate 205-99-2-----Benzo(b) fluoranthene IJ 10. 10. 207-08-9----Benzo(k) fluoranthene U 10. 50-32-8----Benzo(a) pyrene U 10. 193-39-5----Indeno(1,2,3-cd)pyrene U 10. 53-70-3----Dibenzo(a,h)anthracene 10. U 191-24-2----Benzo(g,h,i)perylene\_\_\_ U 10. (1) - Cannot be separated from diphenylamine

FORM I SV-2

EPA SAMPLE NO.

SEMIVOLAT 'E ORGANICS ANALYSIS DATA SHEET TEN\_ATIVELY IDENTIFIED COMPOUNDS

V140S1FS

ab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

atrix: (soil/water) WATER

1000. (g/mL) ML

Lab Sample ID: 3411.1

Lab File ID: D2658 0000 73

Sample wt/vol:

evel: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

dec. 0.

Date Extracted: 5/15/91

<traction: (SepF/Cont/Sonc) SEPF</pre>

Date Analyzed: 6/12/91

CPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	1
1.				
4				
6				
7. 8.				
11				
13				
15.				
16. 17. 18.				
20:				
22.				
23. 24. 25.				
27.				
29.				
30.				

FORM I SV-TIC

## SEMIVOLA\_\_LE ORGANICS ANALYSIS DATA SHEET

'A SAMPLE NO.

V140S1FSRE RE

ab Name: PACE Contract:

Case No.: EPC

SAS No.: SDG No.:

Lab Sample ID: 3411.1 RE atrix: (soil/water) WATER

pH: 7.0

cample wt/vol: 1000. (g/mL) ML Lab File ID: D268 0000 77

Level: (low/med) LOW

PC Cleanup: (Y/N) N

Date Received: 5/11/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

Dilution Factor:

1.00

CAS NO.

ab Code: PACE

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

	(, =	,,, -	
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	Ū
95-57-8	2-Chlorophenol	10.	Ū
	1,3-Dichlorobenzene	10.	Ū
106-46-7	1,4-Dichlorobenzene	10.	Ŭ
100-51-6	Benzyl alcohol	10.	บ
95-50-1	1,2-Dichlorobenzene	10.	Ü
95-48-7	2-Methylphenol	10.	Ū
108-60-1	bis(2-Chloroisopropyl)ether	10.	Ü
106-44-5	4-Methylphenol	10.	Ü
621-64-7	N-Nitroso-di-n-propylamine	10.	Ü
67-72-1	Hexachloroethane	10.	Ü
98-95-3	Nitrobenzene	10.	Ü
78-59-1	Isophorone	10.	Ü
88-75-5	2-Nitrophenol	10.	Ū
105-67-9	2,4-Dimethylphenol	10.	Ū
65-85-0	Benzoic acid	50.	Ū
111-91-1	bis(2-Chloroethoxy)methane	10.	Ū
120-83-2	2,4-Dichlorophenol	10.	Ū
120-82-1	1,2,4-Trichlorobenzene	10.	Ū
91-20-3	Naphthalene	10.	Ū
106-47-8	4-Chloroaniline	10.	Ū
87-68-3	Hexachlorobutadiene	10.	Ū
59-50-7	4-Chloro-3-methylphenol	10.	Ū
91-57-6	2-Methylnaphthalene	10.	111
77-47-4	Hexachlorocyclopentadiene	10.	ŢŢ
88-06-2	2,4,6-Trichlorophenol	10.	บั
95-95-4	2,4,5-Trichlorophenol	50.	Ü
91-58-7	2-Chloronaphthalene	10.	ΰ
88-74-4	2-Nitroaniline	50.	Ŭ
131-11-3	Dimethylphthalate	10.	Ü
208-96-8	Acenaphthylene	10.	Ü
606-20-2	2,6-Dinitrotoluene	10.	Ü
			]
			· ———

EPA SAMPLE NO.

elé

ab Name: PACE

Contract:

V140S1FSRE

5/11/91

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3411.16E 67519

Sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2687

0000

Date Received:

78

evel: (low/med) LOW

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/15/91

xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	(ug/L or	ug/kg)	UG/L	Q
99-09-2	3-Nitroaniline			50.	U
83-32-9	Acenaphthene			10.	ט
51-28-5	2.4-Dinitropheno	01		50.	U
100-02-7	4-Nitrophenol			50.	ט
132-64-9	Dibenzofuran	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		10.	U
121-14-2	2.4-Dinitrotolue	ene		10.	U
84-66-2	Diethylphthalate	<u> </u>		10.	U
7005-72-3	4-Chlorophenyl-r	henvlether		10.	U
86-73-7	Fluorene		<del></del> 1	10.	U
100-01-6	4-Nitroaniline			50.	U
	4,6-Dinitro-2-me	thylphenol		50.	U
86-30-6	N-Nitrosodipheny	lamine	·	10.	U
101-55-3	4-Bromophenyl-ph	envlether		10.	U
118-74-1	Hexachlorobenzen	e.	1	10.	Ū
87-86-5	Pentachloropheno	<u> </u>		50.	Ū
85-01-8	Phenanthrene			10.	U
120-12-7	Anthracene			10.	U
84-74-2	Di-n-butylphthal	ate		10.	Ū
206-44-0	Fluoranthene	<del></del>		10.	U
129-00-0	Pvrene			10.	U
85-68-7	Butylbenzylphtha	late		10.	U
91-94-1	3,3'-Dichloroben	zidine	)	20.	U
56-55-3	Benzo(a) anthrace	ne	<del></del>	10.	Ū
218-01-9	Chrysène		<del></del>	10.	U
117-81-7	bis(2-Ethylhexyl	phthalate		10.	U
117-84-0	Di-n-octv)phthal	ate	<u></u>	10.	บ
205-99-2	Benzo(b)fluorant	hene		10.	ប្រ
207-08-9	Benzo(k)fluorant	hene	_	10.	U
50-32-8	Benzo(a)pyrene		_	10.	U
193-39-5	Indeno(1.2.3-cd)	pyrene		10.	U
53-70-3	Dibenzo(a,h)anth	racene		10.	Ū
191-24-2	Benzo(g,h,i)pery	lene		10.	Ū
<del>-</del>	= 3 (3// = / P = 2/				
- Cannot be	separated from dip	nenvlamine	I		

FORM I SV-2

SEMIVOLA LE ORGANICS ANALYSIS DATA SHEET TE...ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

ورز V140S1FS RE

Lab Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3411.1 DE

& LE 6n5/

sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2687000 79

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

dec. Date Extracted: 5/15/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/17/91

GPC Cleanup:

(Y/N) N

pH: 7.0

Dilution Factor:

1.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				-
. 2				
3				
5				
6				
0.				
9. i				ll
10.			· · · · · · · · · · · · · · · · · · ·	
12.				
13.				
13.				
16.				
18		<del></del>		
19.				
20.				
22.				
23.				
23.				
26.				
27.				
29.				
30				

FORM I SV-TIC



#### DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

PESTICIDE/PCB ANALYSIS DATA
Samples Collected May 10, 14, and 19, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No pesticide/PCB target compound list (TCL) compounds were detected in any of the samples in Laboratory Project Numbers 810511.503, 810515.505, and 810519.500. Detection limits for endrin in Samples V131P10FS, V131P10FD, V131P10FB, and V140P10FS were rejected. No other qualifiers were applied to the data.

Problems identified on the Chain of Custody (COC) records include: (1) transfer signatures are incomplete, missing affiliations of the person(s) involved and in some cases missing a "Relinquished by" or "Accepted by" signature in a pair; (2) cold storage in the field is not clearly documented; (3) separate entries should not be made for MS/MSD samples; (4) corrections to the forms are made incorrectly, and are not initialled and dated; (5) the sampler name and signature at the top of the form should include the <u>full</u> name, not just a first initial; and (6) the sample identifications used on the Form I's in the data packages <u>do not</u> match the identifications listed on the COC's.

Validation of the data packages is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present)
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample detection limit or the sample quantitation limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying copies of the Form I's from the data packages to qualify some of the results as appropriate based on the findings of the data review.



#### Case Narrative

Twenty-one treatment system samples (including separate samples for four matrix spike/matrix spike duplicate pairs) were collected on May 10, May 14, and May 19, 1991; the samples were received at Pace, Inc. on May 11, May 15, and May 19, respectively. Analysis of pesticides and PCB's according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in these three Sample Delivery Groups (SDG's):

Client ID	<u>Lab ID</u>	Lab Project #	<u>Collected</u>
V131P1FS	3393	810511.503	5/10/91
V131P1FB	3394	810511.503	5/10/91
V131P1FD	3395	810511.503	5/10/91
V140P1FS	3413	810511.503	5/10/91
V140P1FD	3414	810511.503	5/10/91
V140P5FS	3517	810515.505	5/14/91
V131P5FS	3518	810515.505	5/14/91
V131P5FD	3519	810515.505	5/14/91
V131P5FB	3520	810515.505	5/14/91
V140P10FS	3697	810519.500	5/19/91
V131P10FS	3698	810519.500	5/19/91
V131P10FD	3699	810519.500	. 5/19/91
V131P10FB	3700	810519.500	5/19/91

Pesticide/PCB analysis results for these samples were reported by the laboratory under the three project numbers listed above.



#### PESTICIDE/PCBs

The areas reviewed during the pesticide/PCB validation procedure are listed below.

- I. Holding Times
- II. Pesticides Instrument Performance
- III. Calibration
  - A. Initial
  - B. Analytical Sequence
  - C. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Compound Identification
  - IX. Compound Quantitation and Reported Detection Limits
  - X. Overall Assessment



#### I. Holding Times

All samples in the three Sample Delivery Groups were extracted and analyzed within the prescribed holding times.

None of the Chain of Custody (COC) records indicate that the samples were placed in cold storage (4°C) at the time of collection, although the use of coolers is indicated by the recorded temperatures upon receipt at the laboratory. Cold storage is a form of preservation and must be documented on the COC, or the validator must assume it was not performed. No qualifiers are applied in this case.

#### II. Pesticides Instrument Performance

All samples in the three SDG's were analyzed under the same standard series, on 6/3-5/91. All DDT retention times exceed 15 minutes; all standard analytes are within the established retention time windows and are correctly transcribed from the raw data to Form IX, and all calculated breakdowns for DDT and Endrin are less than 20% for this 72-hour series.

#### III. Calibration

A. Initial All Percent Relative Standard Deviations (%RSD) on the quantitation column (DB-608) were less than 10%. %RSD's for aldrin, endrin and DDT were 19%, 26%, and 15%, respectively on the DB-5 column, but this column was not used for any quantitations. No data are affected.

#### B. Analytical Sequence

The correct analytical sequence was followed throughout the 72-hour analysis series. Both INDA and INDB standards were run at the intervals where only one or the other is required by the SOW; all criteria were met for both standards in every case. No data are affected.

#### C. Continuing

All %D values for standard analytes on the quantitation column (DB-608) were less than 15%. All %D values on the confirmation column (DB-5) were less than 20%.

Calibration factors could not be confirmed for all analytes using the Standard Concentration Tables provided on pages 53, 44, and 45 of the three data packages. Upon discussion with laboratory personnel, it was determined that the wrong concentration table had been inserted into the data reports; a new table was provided to this validator on 7/5/91, and is attached to this validation report. It replaces pages 53, 44, and 45 in the data packages for laboratory project numbers 810511.503, 810515.505, and 810519.500,



respectively. Calibration factors were completely verifiable using the concentrations from the revised table. No data are affected.

#### IV. Blanks

No target analytes were detected and confirmed in the method blank or field blank associated with any of the three SDG's; method blanks were prepared at the appropriate frequency with each of the three extraction batches on 5/15, 5/20, and 5/22/91.

#### V. Surrogate Recovery

All surrogate recoveries in the three SDG's were within established advisory guidelines for dibutylchlorendate.

### VI. Matrix Spike/Matrix Spike Duplicate

Four MS/MSD pairs were analyzed in association with the three SDG's. Recoveries and Relative Percent Difference (RPD) values were within criteria except for the following:

#### Project #810511.503

V131P1FS MS/MSD:	Endrin gamma-BHC Dieldrin	<pre>%R = 53, 28% (QC limits 56-121%) RPD = 61% (QC limit 21%) RPD = 18% (QC limit 15%) RPD = 24% (QC limit 18%)</pre>
V140P1FS MS/MSD:	Endrin gamma-BHC	<pre>%R = 14, 15% (QC limits 56-121%) %R = 50% (QC limits 56-123%) RPD = 22% (QC limit 15%)</pre>
	Dieldrin	%R = 46% (QC limits 52-126%) RPD = 23% (QC limit 18%)
	Heptachlor DDT	RPD = 26% (QC limit 20%) RPD = 29% (QC limit 27%)

#### Project #810515.505

V131P5FS MS/MSD:	gamma-BHC	R = 48, 29% (QC limits 56-123%)
		RPD = 49% (QC limit 15%)
	Dieldrin	R = 51, 28% (QC limits 52-126%)
		RPD = 57% (QC limit 18%)
	Endrin	R = 55, 32% (QC limits $56-121$ %)
		RPD = 54% (QC limit 21%)
	Aldrin	%R = 26% (QC limits 40-120%)
		RPD = 54% (QC limit 22%)
	Heptachlor	%R = 30% (QC limits 40-131%)
	•	RPD = 51% (QC limit 20%)
	DDT	%R = 28% (QC limits 38-127%)
		RPD = 60% (QC limit 27%)



## Project #810519.500

V131P10FS MS/MSD: gamma-BHC %R = 55, 49% (QC limits 56-123%)

Dieldrin R = 37, 49% (QC limits 52-126%)

RPD = 26% (QC limit 18%)

Endrin R = 4, 4% (QC limits 56-121%)

Although a number of low recoveries were observed most are above 10% and therefore do not require that qualifiers be applied since no positive results were detected in the samples. In Project #810519.500, however, endrin recoveries dropped to 4% in both the MS and MSD; detection limits for endrin are therefore rejected in all four samples in that SDG.

It is noted that the %R values found on the Form III's in each data package do not follow directly from the MS and MSD concentrations listed on these forms; the concentrations have been rounded, and the recoveries were calculated prior to the rounding. None of the differences is significant; it is recommended that the laboratory record values on this form that do allow direct calculation of the reported recoveries.

## VII. Field Duplicates

Four field duplicate pairs were analyzed in the three SDG's; no positive results were detected in any of the samples.

### VIII. Compound Identifications

Spike compounds were correctly identified and confirmed in each MS/MSD pair. No target compounds were identified and confirmed in any of the samples in the three SDG's.

## IX. Compound Quantitation and Reported Detection Limits

All spike compound results and reported sample detection limits are correctly calculated and reported.

#### X. Overall Assessment

No positive results were found for any of the samples reported in Project Numbers 810511.503, 810515.505, or 810519.500. Results are usable as reported <u>except</u> for endrin results in V131P10FS, V131P10FD, V131P10FB, and V140P10FS, which are rejected due to matrix spike recoveries below 10%. No other qualifiers are applied.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in the three data packages reviewed here:



- 1. Transfer signatures are incomplete: affiliations of the persons involved are not included, and some "Relinquished by" or "Accepted by" signatures are missing.
  - 2. Cold storage is not clearly documented.
- 3. Sample identifications used on the Form I's do <u>not</u> match the sample identifications found on the COC's. Specifically, the "P1", "P5", or "P10" portion of the COC identification is left off the Form I's. This leaves no distinction between the samples from the three SDG's on the Form I's, since the rest of the sample numbers are identical. The Form I's attached to this validation report have been corrected to reflect the complete sample identification numbers as found on the COC's.
- 4. Corrections to the forms are done as "Write-overs", and are not initialled or dated.
- 5. The sampler name and signature at the top of the form(s) should include the full name, not just a first initial.
- 6. The MS/MSD pairs are <u>laboratory-initiated</u> quality control samples; separate entries should not be made for these samples on the COC records.

#### 1D PESTICIDE ORGANICS ANALYSIS DATA SHEET

'A SAMPLE NO.

**V131FS** 

Lab Name: PACE

Contract: EPC

00021

Lab Code: PACE

Case No.:

SAS No.:

SDG No .: VI31PIFS

Matrix: (soil/water) WATER

Lab Sample ID: 3393.0

Sample wt/vol:

1000. (g/mL)ML

Lab File ID: V66592

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Extracted: 5/15/91

\*Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/4/91

GPC Cleanup: (Y/N) N

pH: 7.0

dec. 0.

Dilution Factor:

1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

	<del></del>	T
319-84-6Alpha-BHC	.050	ט
319-85-7Beta-BHC	.050	Ū
319-86-8Delta-BHC	.050	Ū
58-89-9Gamma-BHC	.050	U
76-44-8Heptachlor	.050	Ū
309-00-2Aldrin	.050	U
1024-57-3Heptachlor Epoxide	.050	บ
959-98-8Endosulfan I	.050	บ
60-57-1Dieldrin	.10	Ū
72-55-94,4'-DDE	.10	Ū
72-20-8Endrin	.10	U
33213-65-9Endosulfan II	.10	U
72-54-84,4'-DDD	.10	U
1031-07-8Endosulfan Sulfate	.10	ט
50-29-34,4'-DDT	.10	U
72-43-5Methoxychlor	.50	U
53494-70-5Endrin Ketone	.10	ט
5103-71-9alpha-Chlordane	.50	U
5103-74-2gamma-Chlordane	.50	U
8001-35-2Toxaphene	1.0	ุบ
12674-11-2Arochlor-1016	.50	U
11104-28-2Arochlor-1221	.50	U
11141-16-5Arochlor-1232	.50	U
53469-21-9Arochlor-1242	.50	ប
12672-29-6Arochlor-1248	.50	U
11097-69-1Arochlor-1254	1.0	U
11096-82-5Arochlor-1260	1.0	U

TA SAMPLE NO.

V131FB 0<u>002</u>

ab Name: PACE

Contract: EPC

ib Code: PACE

Case No.:

SAS No.:

SDG NO .: VI3|PIFB

Matrix: (soil/water) WATER

Lab Sample ID: 3394.8

Caz7/9/91

: imple wt/vol:

1000. (g/mL)ML

Lab File ID: V66585

Jevel:

(low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Extracted: 5/15/91

F:traction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/3/91

GPC Cleanup:

(Y/N) N

pH: 7.0

Ο.

dec.

Dilution Factor:

1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND

319-84-6----Alpha-BHC

319-86-8----Delta-BHC

60-57-1----Dieldrin

72-55-9----4,4'-DDE

72-54-8----4,4'-DDD

50-29-3----4,4'-DDT

8001-35-2----Toxaphene

33213-65-9----Endosulfan II

72-43-5----Methoxychlor

5103-71-9----alpha-Chlordane

5103-74-2----gamma-Chlordane

53494-70-5----Endrin Ketone

12674-11-2----Arochlor-1016

11104-28-2----Arochlor-1221

11141-16-5----Arochlor-1232

53469-21-9----Arochlor-1242

12672-29-6----Arochlor-1248

11097-69-1----Arochlor-1254

11096-82-5----Arochlor-1260

72-20-8----Endrin

58-89-9----Gamma-BHC

76-44-8----Heptachlor

959-98-8----Endosulfan I

1024-57-3----Heptachlor Epoxide

1031-07-8----Endosulfan Sulfate

319-85-7----Beta-BHC

309-00-2----Aldrin

Q (ug/L or ug/Kg) UG/L

> .050 .050 U .050 U .050 U .050 U .050 U U .050 .050 U .10 U .10 U .10 U U .10 .10 U .10 U U .10 U .50 U .10 .50 U .50 U 1.0 U .50 U .50 U

> > .50

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## PESTILIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE

Contract: EPC

V131FD<sub>0</sub>0<u>034</u>

ab Code: PACE

Case No.:

SAS No.:

SDG NO.: VI31PIFD

Matrix: (soil/water) WATER

Moisture: not dec.100.

Lab Sample ID: 3395.6 CA£ 7/4/4/

: imple wt/vol:

(g/mL)ML 1000.

Lab File ID: V66594

Date Received: 5/11/91

Level: (low/med) LOW

dec. 0.

Date Extracted: 5/15/91

Fitraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/4/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

		<del></del>
319-84-6Alpha-BHC	.050	U
319-85-7Beta-BHC	.050	ប
319-86-8Delta-BHC	.050	U
58-89-9Gamma-BHC	.050	שׁ
76-44-8Heptachlor	.050	U
309-00-2Aldrin	.050	U
1024-57-3Heptachlor Epoxide	.050	U
959-98-8Endosulfan I	.050	U
60-57-1Dieldrin	.10	Ū
72-55-94,4'-DDE	.10	U
72-20-8Endrin	.10	Ū
33213-65-9Endosulfan II	.10	U
72-54-84,4'-DDD	.10	U
1031-07-8Endosulfan Sulfate	.10	Ū
50-29-34,4'-DDT	.10	U
72-43-5Methoxychlor	.50	ប
53494-70-5Endrin Ketone	.10	U
5103-71-9alpha-Chlordane	.50	U
5103-74-2gamma-Chlordane	.50	ט
8001-35-2Toxaphene	1.0	U
12674-11-2Arochlor-1016	.50	U
11104-28-2Arochlor-1221	.50	U
11141-16-5Arochlor-1232	.50	U
53469-21-9Arochlor-1242	.50	Ū
12672-29-6Arochlor-1248	.50	Ū
11097-69-1Arochlor-1254	1.0	U
11096-82-5Arochlor-1260	1.0	Ū

TA SAMPLE NO.

**V140FS** 

00040

Lab Name: PACE

Contract: EPC

SDG No .: V140P1F5

ab Code: PACE

Case No.:

SAS No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3413.8

CAE 7/9/91

ample wt/vol:

1000.

(g/mL)ML

Lab File ID: V66595

Level: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Extracted: 5/15/91

"xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/4/91

GPC Cleanup: (Y/N) N

pH: 7.0

dec. 0.

Dilution Factor:

1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

319-84-6Alpha-BHC	.050	บ
319-85-7Beta-BHC	.050	บ
319-86-8Delta-BHC	.050	Ū
58-89-9Gamma-BHC	.050	Ū
76-44-8Heptachlor	.050	Ū
309-00-2Aldrin	.050	Ū
1024-57-3Heptachlor Epoxide	.050	Ū
959-98-8Endosulfan I	.050	Ŭ
60-57-1Dieldrin	.10	Ŭ
72-55-94,4'-DDE	.10	Ū
72-20-8Endrin	.10	Ū
33213-65-9Endosulfan II	.10	Ū
72-54-84,4'-DDD	.10	Ū
1031-07-8Endosulfan Sulfate	.10	Ū
50-29-34,4'-DDT	.10	Ū
72-43-5Methoxychlor	.50	Ū
53494-70-5Endrin Ketone	.10	Ū
5103-71-9alpha-Chlordane	.50	Ŭ
5103-74-2gamma-Chlordane	.50	Ŭ
8001-35-2Toxaphene	1.0	Ŭ
12674-11-2Arochlor-1016		Ŭ
11104-28-2Arochlor-1221		Ŭ
11141-16-5Arochlor-1232		Ŭ
53469-21-9Arochlor-1242	.50	Ŭ
12672-29-6Arochlor-1248		Ü
11097-69-1Arochlor-1254		Ü
11096-82-5Arochlor-1260		Ŭ
11070 UZ 3 ALOGHIOI 1200	1 1.0	-
- A. C C C C C C C		

# PESTL IDE ORGANICS ANALYSIS DATA SHEET

TA SAMPLE NO.

V140FD

Lab Name: PACE

Contract: EPC

<del>00046</del>

ab Code: PACE

Case No.:

SAS No.:

SDG No .: VI40PIFD

Matrix: (soil/water) WATER

Lab Sample ID: 3414.6

Cax 7/9/91

:ample wt/vol:

1000. (g/mL)ML

Lab File ID: V66600

Level: (low/med) LOW

Date Received: 5/11/91

. Moisture: not dec.100.

dec. 0.

Date Extracted: 5/15/91

-Txtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/4/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

319-84-6Alpha-BHC		.050	ט
319-85-7Beta-BHC		.050	U
319-86-8Delta-BHC		.050	υ
58-89-9Gamma-BHC		.050	ט
76-44-8Heptachlor	1	.050	ט
309-00-2Aldrin		.050	U
1024-57-3Heptachlor Epoxide		.050	U
959-98-8Endosulfan I		.050	ט
60-57-1Dieldrin		.10	U
72-55-94,4'-DDE		.10	U
72-20-8Endrin		.10	U
33213-65-9Endosulfan II		.10	U
72-54-84,4'-DDD		.10	U
1031-07-8Endosulfan Sulfate		.10	U
50-29-34,41-DDT		.10	U
72-43-5Methoxychlor		.50	U
53494-70-5Endrin Ketone		.10	Ū
5103-71-9alpha-Chlordane		.50	U
5103-74-2gamma-Chlordane		.50	Ū
8001-35-2Toxaphene		1.0	U
12674-11-2Arochlor-1016		.50	Ū
11104-28-2Arochlor-1221		.50	Ū
11141-16-5Arochlor-1232		.50	U
53469-21-9Arochlor-1242		.50	Ū
12672-29-6Arochlor-1248		.50	Ū
11097-69-1Arochlor-1254		1.0	Ū
11096-82-5Arochlor-1260		1.0	ָּט (

V140FS) 0 0 1 9

ab Name: PACE Contract: EPC

ab Code: PACE Case No.: SAS No.: SDG No.: VI40P5 F5

Matrix: (soil/water) WATER Lab Sample ID: 3517.7 Cat 499

fample wt/vol: 1000. (g/mL)ML Lab File ID: V66607

revel: (low/med) LOW Date Received: 5/15/91

. Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

Txtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

319-84-6Alpha-BHC	.050 U	
319-85-7Beta-BHC	.050 U	
319-86-8Delta-BHC	.050 U	
58-89-9Gamma-BHC	.050 U	
76-44-8Heptachlor	.050 U	
309-00-2Aldrin	.050 U	
1024-57-3Heptachlor Epoxide	.050 U	
959-98-8Endosulfan I	.050 U	
60-57-1Dieldrin	.10 U	
72-55-94,4'-DDE	,10 U	
72-20-8Endrin	.10 U	
33213-65-9Endosulfan II	.10 U	
72-54-84,4'-DDD	.10 U	
1031-07-8Endosulfan Sulfate	.10 U	
50-29-34,4'-DDT	.10 U	
72-43-5Methoxychlor	.50   บ	
53494-70-5Endrin Ketone	.10 U	
5103-71-9alpha-Chlordane	.50 ป	
5103-74-2gamma-Chlordane	.50 U	
8001-35-2Toxaphene	1.0 U	
12674-11-2Arochlor-1016	.50 U	
11104-28-2Arochlor-1221	.50 U	
11141-16-5Arochlor-1232	.50 U	
53469-21-9Arochlor-1242	.50 บ	
12672-29-6Arochlor-1248	.50 บ	
11097-69-1Arochlor-1254	1.0 U	
11096-82-5Arochlor-1260	1.0 U	

Q

## PESTL-IDE ORGANICS ANALYSIS DATA SHEET

₽19 0±25

Lab Name: PACE Contract: EPC

ab Code: PACE Case No.: SAS No.: SDG No.: VI3/P5 F5

Matrix: (soil/water) WATER Lab Sample ID: 3518.5

Ca& 7/9/91

ample wt/vol: 1000. (g/mL)ML Lab File ID: V66608

revel: (low/med) LOW Date Received: 5/15/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

319-84-6----Alpha-BHC .050 U 319-85-7----Beta-BHC .050 U 319-86-8----Delta-BHC U .050 58-89-9----Gamma-BHC .050 U 76-44-8----Heptachlor .050 U 309-00-2----Aldrin .050 U 1024-57-3----Heptachlor Epoxide .050 U 959-98-8----Endosulfan I U .050 60-57-1----Dieldrin .10 U 72-55-9----4,4'-DDE U .10 72-20-8----Endrin U .10 33213-65-9----Endosulfan II U .10 72-54-8----4,4'-DDD .10 U 1031-07-8----Endosulfan Sulfate .10 U 50-29-3----4,4'-DDT .10 U 72-43-5----Methoxychlor .50 U 53494-70-5----Endrin Ketone U .10 5103-71-9----alpha-Chlordane U .50 5103-74-2----gamma-Chlordane .50 U 8001-35-2----Toxaphene U 1.0 12674-11-2----Arochlor-1016 .50 U 11104-28-2----Arochlor-1221 .50 U 11141-16-5----Arochlor-1232 .50 U 53469-21-9----Arochlor-1242 .50 U 12672-29-6----Arochlor-1248 .50 U 11097-69-1----Arochlor-1254 1.0 U 11096-82-5----Arochlor-1260 U

## PESTICIDE ORGANICS ANALYSIS DATA SHEET

ab Name: PACE Contract: EPC

v1916631

ab Code: PACE Case No.: SAS No.: SDG No.: VI31P5 FD

Matrix: (soil/water) WATER Lab Sample ID: 3519.3  $\frac{\text{CaE}}{2|q|q_1}$ 

ample wt/vol: 1000. (g/mL)ML Lab File ID: V66612

revel: (low/med) LOW Date Received: 5/15/91

→ Moisture: not dec. 100. dec. 0. Date Extracted: 5/20/91

xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/ 4/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Q

·		
319-84-6Alpha-BHC	.050	U
319-85-7Beta-BHC	.050	Ū
319-86-8Delta-BHC	.050	ี่บั
58-89-9Gamma-BHC	.050	Ū
76-44-8Heptachlor	.050	บ
309-00-2Aldrin	.050	ט
1024-57-3Heptachlor Epoxide	.050	Ū
959-98-8Endosulfan I	.050	บ
60-57-1Dieldrin	.10	บั
72-55-94,4'-DDE	.10	Ū
72-20-8Endrin	.10	lu
33213-65-9Endosulfan II	.10	Ū
72-54-84,4'-DDD	.10	Ū
1031-07-8Endosulfan Sulfate	.10	บ
50-29-34,4'-DDT	.10	U
72-43-5Methoxychlor	.50	U
53494-70-5Endrin Ketone	.10	U
5103-71-9alpha-Chlordane	.50	U
5103-74-2gamma-Chlordane	.50	שׁ
8001-35-2Toxaphene	1.0	U
12674-11-2Arochlor-1016	.50	U
11104-28-2Arochlor-1221	.50	U
11141-16-5Arochlor-1232	.50	ט
53469-21-9Arochlor-1242	.50	ט
12672-29-6Arochlor-1248	.50	U
11097-69-1Arochlor-1254	1.0	U
11096-82-5Arochlor-1260	1.0	ט

## PESTILIDE ORGANICS ANALYSIS DATA SHEET

A SAMPLE NO.

V131FB

Contract: EPC Lab Name: PACE

<del>0003</del>7

Lab Code: PACE Case No.:

SAS No.:

SDG No .: VI31P5 FB

Matrix: (soil/water) WATER

Lab Sample ID: 3520.7

Cae 7/9/91

1000. (g/mL)ML Lab File ID: V66613

Sample wt/vol:

(low/med) LOW Date Received: 5/15/91

Level:

% Moisture: not dec.100.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/4/91

GPC Cleanup:

(Y/N) N

7.0 pH:

0.

dec.

Dilution Factor:

1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UC/L

Q

319-84-6Alpha-BHC	.050	U
319-85-7Beta-BHC	.050	ប
319-86-8Delta-BHC	.050	U
58-89-9Gamma-BHC	.050	ט
76-44-8Heptachlor	.050	บ
309-00-2Aldrin	.050	U
1024-57-3Heptachlor Epoxide	.050	U
959-98-8Endosulfan I	.050	ט
60-57-1Dieldrin	.10	U
72-55-94,4'-DDE	.10	ט
72-20-8Endrin	.10	Ū
33213-65-9Endosulfan II	.10	U
72-54-84,4'-DDD	.10	U
1031-07-8Endosulfan Sulfate	.10	U
50-29-34,4'-DDT	.10	U
72-43-5Methoxychlor	.50	U
53494-70-5Endrin Ketone	.10	ט
5103-71-9alpha-Chlordane	.50	บ
5103-74-2gamma-Chlordane	.50	U
8001-35-2Toxaphene	1.0	U
12674-11-2Arochlor-1016	.50	U
11104-28-2Arochlor-1221	.50	บ
11141-16-5Arochlor-1232	.50	U
53469-21-9Arochlor-1242	.50	lυ
12672-29-6Arochlor-1248	.50	U
11097-69-1Arochlor-1254	1.0	บ
11096-82-5Arochlor-1260	1.0	U
		<b></b> _

\ SAMPLE NO.

Q

SDG No.:

Lab File ID: V66618

V140FS cae ab Name: PACE Contract: EPC V140P10FS 2/9/91 00020

SAS No.:

fatrix: (soil/water) WATER Lab Sample ID: 3697.1

(g/mL)ML

Case No.:

1000.

1b Code: PACE

imple wt/vol:

'evel: (low/med) LOW Date Received: 5/19/91

. Moisture: not dec.100. dec. 0. Date Extracted: 5/22/91

itraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/5/91

JPC Cleanup: (Y/N) N 7.0 Dilution Factor: pH: 1.00

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

319-84-6----Alpha-BHC .050 319-85-7----Beta-BHC .050 U 319-86-8----Delta-BHC .050 U 58-89-9----Gamma-BHC U .050 76-44-8----Heptachlor .050 U 309-00-2----Aldrin U .050 1024-57-3----Heptachlor Epoxide U .050 959-98-8----Endosulfan I .050 U .10 60-57-1----Dieldrin U 72-55-9----4,4'-DDE U .10 72-20-8----Endrin -10 U 33213-65-9----Endosulfan II .10 U CaE 72-54-8----4,4'-DDD U .10 2/9/91 1031-07-8----Endosulfan Sulfate U .10 50-29-3----4,4'-DDT U .10 72-43-5----Methoxychlor .50 U 53494-70-5----Endrin Ketone U .10 5103-71-9----alpha-Chlordane .50 U 5103-74-2----gamma-Chlordane U .50 8001-35-2----Toxaphene 1.0 U 12674-11-2----Arochlor-1016 .50 U 11104-28-2----Arochlor-1221 U .50 11141-16-5----Arochlor-1232 U .50 53469-21-9----Arochlor-1242 U .50 12672-29-6----Arochlor-1248 U .50 11097-69-1----Arochlor-1254 U 1.0 11096-82-5----Arochlor-1260 1.0 U

Contract: EPC Lab Name: PACE

V131FS Cas V131P10F5

\_ab Code: PACE

Case No.:

SAS No.:

SDG No.:

00026

Matrix: (soil/water) WATER

Lab Sample ID: 3698.0

;ample wt/vol:

1000. (g/mL)ML

Lab File ID: V66619

Level: (low/med) LOW

Date Received: 5/19/91

, Moisture: not dec.100.

dec. 0. Date Extracted: 5/22/91

Txtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/5/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

Q

319-84-6Alpha-BHC 319-85-7Beta-BHC 319-86-8Delta-BHC 58-89-9Gamma-BHC 76-44-8Heptachlor 309-00-2Aldrin 1024-57-3Heptachlor Epoxide 959-98-8Endosulfan I 60-57-1Dieldrin 72-55-94,4'-DDE 72-20-8Endrin 33213-65-9Endosulfan II 72-54-84,4'-DDD 1031-07-8Endosulfan Sulfate 50-29-34,4'-DDT 72-43-5Methoxychlor 53494-70-5Endrin Ketone 5103-71-9alpha-Chlordane 5103-74-2gamma-Chlordane 801-35-2Toxaphene 12674-11-2Arochlor-1016 11104-28-2Arochlor-1221 11141-16-5Arochlor-1221 1141-16-5Arochlor-1242 12672-29-6Arochlor-1248 11097-69-1Arochlor-1254 11096-82-5Arochlor-1256	.050 .050 .050 .050 .050 .050 .050 .10 .10 .10 .10 .10 .50 .50 .50 .50 .50 .50	ממממממממממממממממממממממ
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## PESTICIDE ORGANICS ANALYSIS DATA SHEET

ab Name: PACE Contract: EPC COE VI31FD VI31FD VI31FD

ab Code: PACE Case No.: SAS No.: SDG No.: 00032

Matrix: (soil/water) WATER Lab Sample ID: 3699.8

ample wt/vol: 1000. (g/mL)ML Lab File ID: V66623

revel: (low/med) LOW Date Received: 5/19/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/22/91

rxtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/ 5/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

319-84-6Alpha-BHC 319-85-7Beta-BHC 319-86-8Delta-BHC 58-89-9Gamma-BHC 76-44-8Heptachlor 309-00-2Aldrin 1024-57-3Heptachlor Epoxide 959-98-8Endosulfan I 60-57-1Dieldrin 72-55-94,4'-DDE 72-20-8Endrin 33213-65-9Endosulfan II 72-54-84,4'-DDD 1031-07-8Endosulfan Sulfate 50-29-34,4'-DDT 72-43-5Methoxychlor 53494-70-5Endrin Ketone 5103-71-9Alpha-Chlordane 8001-35-2Toxaphene 12674-11-2Arochlor-1212 11141-16-5Arochlor-1221 1141-16-5Arochlor-1232 53469-21-9Arochlor-1248 11097-69-1Arochlor-1254 11096-82-5Arochlor-1254	050 .050 .050 .050 .050 .050 .050 .10 .10 .10 .10 .10 .10 .50 .10 .50 .50 .50 .50 .50	מממממממממממממממממממממ
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'A SAMPLE NO.

Lab Name: PACE

Contract: EPC

V131FB V131P10FP

Lab Code: PACE

Case No.:

COMPOUND

SAS No.:

SDG No.:

0003R

Matrix: (soil/water) WATER

Lab Sample ID: 3700.5

sample wt/vol:

1000.

Lab File ID: V66624

Level:

LOW

Date Received: 5/19/91

(low/med)

Date Extracted:

5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

& Moisture: not dec.100.

dec. 0.

(g/mL)ML

Date Analyzed: 6/5/91

.50

.50

.50

.50

1.0

1.0

U

U

U

U

U

U

11104-28-2----Arochlor-1221

11141-16-5----Arochlor-1232

53469-21-9----Arochlor-1242

12672-29-6----Arochlor-1248

11097-69-1----Arochlor-1254

11096-82-5----Arochlor-1260

pH: 7.0

Dilution Factor:

GPC Cleanup:

CAS NO.

(Y/N) N

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

Q

319-84-6----Alpha-BHC .050 U .050 319-85-7----Beta-BHC U 319-86-8----Delta-BHC .050 U U 58-89-9----Gamma-BHC .050 76-44-8----Heptachlor U .050 309-00-2----Aldrin .050 U 1024-57-3----Heptachlor Epoxide .050 U 959-98-8----Endosulfan I U .050 60-57-1----Dieldrin .10 U 72-55-9----4,4'-DDE .10 U <del>-10</del> 72-20-8----Endrin U .10 U 33213-65-9----Endosulfan II 72-54-8----4,4'-DDD .10 U 7/4/9/ 1031-07-8----Endosulfan Sulfate U .10 50-29-3----4,4'-DDT .10 U 72-43-5----Methoxychlor .50 U 53494-70-5----Endrin Ketone .10 U 5103-71-9----alpha-Chlordane U .50 5103-74-2----gamma-Chlordane U .50 8001-35-2----Toxaphene U 1.0 12674-11-2----Arochlor-1016 .50 U



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

AND

AREAL SAMPLING

INORGANIC ANALYSES DATA

Samples Collected 5/10/91-5/28/91

Chemical Analyses Performed By
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

All wet chemistry data is acceptable as modified.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting Based on the supporting documentation, qualifier documentation. codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without Validator qualified results are annotated with the reservations. following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Inorganic Data Validation

for

## Environmental Project Control, Inc.

## Samples Collected 5/10/91-5/28/91

## Case Narrative

This group contained 43 water samples analyzed for total alkalinity, chloride, soluble fluoride, nitrite/nitrate, total phosphorus, dissolved silica, total dissolved solids, sulfate, hexavalent chromium, and total organic carbon.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
V131TDS1	34022	05/10/91
V131TDS1 V131TDS1FB	34022	05/10/91
V131TDS1FD V131TDS1FD	34049	05/10/91
V131TOC1	34057	05/10/91
V131TOC1FB	34065	05/10/91
V131TOC1FD	34073	05/10/91
V140TDS1	34197	05/10/91
V140TDS1FD	34200	05/10/91
V140TOC	34219	05/10/91
V140TOC FD	34227	05/10/91
V140TDS5	35282	05/10/91
V131TDS5	35290	05/14/91
V131TDS5FD	35304	05/14/91
V131TDS5FB	35312	05/14/91
V140TOC5	35320	05/14/91
V131TOC5	35339	05/14/91
V131TOC5FD	35347	05/14/91
V131TOC5FB	35355	05/14/91
V140HC5	35398	05/14/91
V131HC5	35401	05/14/91
V1315FD	35410	05/14/91
V131HC5FB	35428	05/14/91
V140HC6	35894	05/15/91
V131HC6	35908	05/15/91
V131HC6FD	35916	05/15/91
V131HC6FB	35924	05/15/91
V140TOC10	37056	05/19/91
V131TOC10	37064	05/19/91
V131TOC10FD	37072	05/19/91
V131TOC10FB	37080	05/19/91
V140TDSFS	37099	05/19/91



V131TDS10	37102	05/19/91
V131TDS10FD	37110	05/19/91
V131TDS10FB	37129	05/19/91
V140HC10	37170	05/19/91
V131HC10	37188	05/19/91
V131HC1OFD	37196	05/19/91
V131HC10FB	37200	05/19/91
UC145	41045	05/28/91
UC72	41053	05/28/91
UC141	41061	05/28/91
UC112	41070	05/28/91
UC18	41088	05/28/91

The areas reviewed during validation are listed below.



## Wet Chemistry Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. Matrix Spike Sample Analysis
- V. Duplicate Sample Analysis
- VI. Sample Result Verification
- VII. Overall Assessment



#### Data Validation

## I. Holding Times

All wet chemistry analyses were conducted within acceptable holding times.

#### II. Calibration

The correlation coefficient for the calibration curve for sulfate was 0.9814. All positive sulfate results and detection limits were qualified as estimated.

## III. Blanks

Field blank results are summarized below.

Sample (FB)	<u>Parameter</u>	Result (ppm)
V131TDS1	Alkalinity	2
V131TOC1	Nitrate/Nitrite TOC	0.52 0.9
V131TDS5	Alkalinity	2
V131TOC5	Nitrate/Nitrite TOC	0.1 0.5
V131TOC10	Nitrate/Nitrite TOC	0.2 0.7
V131TDS10	Alkalinity	2.0

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value.

No field blank was provided for samples collected on 28 May. Results for these samples should be used with caution.



## IV. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except as noted below (Criteria 75%-125%).

Spiked Sample	<u>Parameter</u>	Recovery (%)
V131TOC1	Nitrate/Nitrite	250
V131TDS5	Chloride	0
V131TOC10	Nitrate/Nitrite	135
UG12	Nitrate/Nitrite	10

Positive nitrate/nitrite results for samples associated with V131TOC1, V131TOC10, and UG12 were estimated (J). Detection limits for samples associated with UG12 were rejected (R). Positive chloride results associated with V131TDS5 were estimated (J) and detection limits associated with V131TDS5 were rejected (R).

### V. Duplicate Sample Analysis

Duplicate results were acceptable except as noted below (Criteria RPD ± 20%).

Duplicate Sample	<u>Parameter</u>	RPD (%)
V131TDS5	Chloride	38
V131TOC10	TOC	43

Positive chloride results for samples associated with V131TDS5 and positive TOC results for samples associated with V131TOC10 were estimated (J).

## VI. Sample Result Verification

Form I's were correct.

## VII. Overall Assessment

All data were acceptable with the changes noted above.

,							
	W.R.GRACE	PACE	Project	Number:	810511503		
	PACE Sample Number: Date Collected: Date Received:					95 0034022 05/10/91 05/11/91 V131 TDS1	
	<u>Parameter</u>			<u>Units</u>	MDL	FS	
	INORGANIC ANALYSIS						
	INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate			mg/L mg/L mg/L mg/L mg/L	1 0.1 0.2 1 5	94 76.6 ND 16.9 352 35.4	pan 7/18/91

MDL

Method Detection Limit Not detected at or above the MDL. ND

W.R.GRACE	PACE Project Number:	810511503
PACE Sample Number:		

 PACE Sample Number:
 95 0034030

 Date Collected:
 05/10/91

 Date Received:
 05/11/91

 V131 TDS1

 Parameter
 Units
 MDL

 FB
 THORGANIC ANALYSIS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Alkalinity, Total 2 mg/L 1 mg/L mg/L Chloride ND 1 Silica, dissolved 0.2 ND Solids, Total Dissolved mg/L 1 ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W.R.GRACE	PACE Project Number	: 810511503

•	PACE Sample Number: Date Collected: Date Received:			95 0034049 05/10/91 05/11/91 V131 TDS1	
	Parameter	<u>Units</u>	MDL	FD	
•	INORGANIC ANALYSIS				
¥	INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate	mg/L mg/L mg/L mg/L mg/L mg/L	1 0.1 0.2 1 5	93 77.1 ND 17.5 340 31.7	pon 7/18/91

Method Detection Limit Not detected at or above the MDL. MDL ND

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number: Date Collected:

Date Received:

95 0034057

05/10/91

05/11/91 V131 TOC1

<u>Parameter</u>

<u>Units</u>

<u>M</u>DL

FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Nitrogen, Nitrate plus Nitrite

Phosphorus, Total Total Organic Carbon mg/L 0.02 mg/L 0.3

mg/L 0.10

MDL

Method Detection Limit

ND Not detected at or above the MDL.

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number: Date Collected:

Date Received:

95 0034065 05/10/91

05/11/91 VI31 TOCI

<u>Parameter</u>

<u>Units</u>

MDL FB\_\_\_

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite Phosphorus, Total

mg/L 0.02 mg/L 0.3

ND

0.52 J pon 7/18/91

Total Organic Carbon

mg/L

0.10 .9

MDL ND

Method Detection Limit

Not detected at or above the MDL.

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number:

Date Collected:

Date Received:

95 0034073

05/10/91

05/11/91 V131 TOC1

FD\_\_\_

<u>Parameter</u>

<u>Units</u> MDL

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite

Phosphorus, Total Total Organic Carbon

4.2 J mg/L 0.2

mg/L 0.3 ND mg/L

0.10 4.0

MDL

Method Detection Limit

ND Not detected at or above the MDL.

356 33.2 J pan 7/18/91

W.R.GRACE	PACE Project Number:	810511503		
PACE Sample Number: Date Collected: Date Received:			95 0034197 05/10/91 05/11/91 V140 TDS1	
<u>Parameter</u>	<u>Units</u>	MDL	FS	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved	mg/L mg/L mg/L mg/L mg/L	1 1 0.1 0.2	91 78.0 ND 22.5 356	2.1
Joings, Total Dissolved	llig/ L	ı	330	-119191

mg/L

5

MDL Method Detection Limit

Sulfate

ND Not detected at or above the MDL.

W.R.GRACE	PACE Project	t Number: 81	0511503		0.0
PACE Sample Number: Date Collected: Date Received:				95 0034200 05/10/91 05/11/91 V140 TDS1	
<u>Parameter</u>		<u>Units</u>	MDL	FD	
INORGANIC ANALYSIS	-				-
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate		mg/L mg/L mg/L mg/L mg/L	1 0.1 0.2 1 5	91 77.7 ND 23.2 352 32.3 J psn	- +118191

MDL

Method Detection Limit

ND Not detected at or above the MDL.

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number: Date Collected: Date Received:			95 00 05/10 05/11 V140	/91	
<u>Parameter</u>	<u>Units</u>	MDL	FS		
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS Nitrogen, Nitrate plus Nitrite Phosphorus, Total Total Organic Carbon	mg/L mg/L mg/L	0.2 0.3 0.10	4.1 ND 2.0	U-on	7118191

MDL Method Detection Limit

ND Not detected at or above the MDL.

W.R.GRACE

PACE Project Number: 810511503

PACE Sample Number: Date Collected:

Date Received:

95 0034227

05/10/91 05/11/91

V140 TOC

<u>Parameter</u> <u>Units</u> MDL <u>FD</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite mg/L 0.2 3.6 Phosphorus, Total \* Total Organic Carbon mg/L 0.3

1.4 U pon 7/18/91 mg/L 0.10

MDL Method Detection Limit

ND Not detected at or above the MDL.

M. K. GRACE	PACE Project Number:	810515505		
PACE Sample Number: Date Collected: Date Received:		,	95 0035282 05/14/91 05/15/91 V140 TDS5	
<u>Parameter</u>	<u>Units</u>	MDL	FS	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate	mg/L mg/L mg/L mg/L mg/L mg/L	1 1 0.1 0.2 1 5	92 78.6 J ND 18.2 306 34.7 J pan 711819	1

MDL

Method Detection Limit Not detected at or above the MDL. ND

Λ	Λ	Λ	-	
u	u	u	6	4

W. R. GRACE	PACE Projec	t Number:	810515505		00064
PACE Sample Number: Date Collected: Date Received:				95 0035290 05/14/91 05/15/91 V131 TDS5	
<u>Parameter</u>		<u>Units</u>	MDL		
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS Alkalinity, Total Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate		mg/L mg/L mg/L mg/L mg/L	1 0.1 0.2 1 5	94 ND 16.6 300 32.8 J	n 7/18/91

MDL

Method Detection Limit Not detected at or above the MDL. ND

М.	R.	GRACE
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PACE Project Number: 810515505

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0035304 05/14/91 05/15/91 V131 TDS5 FD	
1 dr dine cor	<u>OITTCS</u>	TIDE	10	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate	mg/L mg/L mg/L mg/L mg/L mg/L	1 0.1 0.2 1 5	94 78.0 J ND 16.4 318 30.3 J	pon 7/18/91

MDL Method Detection Limit

ND Not detected at or above the MDL.

Ж.	К.	GRACE

PACE Project Number: 810515505

PACE	Sample Number:
Date	Collected:
Date	Received:

95 0035312 05/14/91 05/15/91 V131 TDS5

<u>Parameter</u>

Units MOL FB

## INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved	mg/L mg/L mg/L mg/L	0.1 0.2	2 ND ND ND	man 7/18/91
Sulfate	mg/L	5	ND J	pon 7/10/11

MDL Method Detection Limit

ND Not detected at or above the MDL.

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W. R. GRACE

PACE Project Number: 810515505

 PACE Sample Number:
 95 0035320

 Date Collected:
 05/14/91

 Date Received:
 05/15/91

 V140 TOC5

 Parameter
 Units
 MDL
 FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite mg/L 0.2 3.5
Phosphorus, Total mg/L 0.3 ND
Total Organic Carbon mg/L 0.10 1.5 U pm 7/18/91

MDL Method Detection Limit

W. R. GRACE	PACE Project	Number:	810515505		00068
PACE Sample Number: Date Collected: Date Received:				95 0035339 05/14/91 05/15/91 V131 TOC5	
<u>Parameter</u>		<u>Units</u>	MDL	FS	
INORGANIC ANALYSIS		-			
INDIVIDUAL PARAMETERS Nitrogen, Nitrate plus Ni Phosphorus, Total Total Organic Carbon	trite	mg/L mg/L mg/L	0.2 0.3 0.10	3.1 ND 1.9 U pm	7118)91

MDL

Method Detection Limit Not detected at or above the MDL. ND

00069 W. R. GRACE PACE Project Number: 810515505

PACE Sample Number: Date Collected: 95 0035347 05/14/91 Date Received: 05/15/91 V131 TOC5

<u>Parameter</u> MDL <u>Units</u> FD

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Nitrogen, Nitrate plus Nitrite Phosphorus, Total Total Organic Carbon mg/L 0.2 3.4 0.3 mg/L ND

0.10 4 pan 7/18/91 mg/L

MDL Method Detection Limit

W. R. GRACE	PACE Project Number:	810515505
PACE Sample Number:		

 PACE Sample Number:
 95 0035355

 Date Collected:
 05/14/91

 Date Received:
 05/15/91

V131 TOC5 <u>Units</u> <u>MDL</u> <u>FB</u>

**INORGANIC ANALYSIS** 

<u>Parameter</u>

MDL Method Detection Limit

W. R. GRACE

PACE Project Number: 810515505

PACE Sample Number: Date Collected: Date Received:

95 0035398 05/14/91

05/15/91 V140 HC5

MDL FS

<u>Parameter</u>

<u>Units</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Chromium, Hexavalent

mg/L

0.01 .02

MDL

Method Detection Limit

W. R. GRACE

PACE Project Number: 810515505

PACE Sample Number: Date Collected: Date Received:

95 0035401

05/14/91

05/15/91 V131 HC5

<u>Parameter</u>

Units

MDL FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

W. R. GRACE

PACE Project Number: 810515505

PACE Sample Number: Date Collected:

Date Received:

95 0035410

05/14/91

05/15/91 V131 HC5

<u>Parameter</u>

<u>Units</u>

MDL\_

FD\_

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

W. R. GRACE

PACE Project Number: 810515505

PACE Sample Number:

Date Collected: Date Received:

95 0035428

05/14/91 05/15/91

V131 HC5

<u>Parameter</u>

<u>Units</u>

MDL FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Chromium, Hexavalent

mg/L

0.01 ND

MDL

Method Detection Limit

W. R. GRACE

PACE Project Number: 810516512

PACE Sample Number: Date Collected:

95 0035894 05/15/91

Date Received:

05/16/91

V140 HC6

<u>Parameter</u>

<u>FS</u> <u>Units</u> MDL

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

W. R. GRACE

PACE Project Number: 810516512

PACE Sample Number: Date Collected: Date Received:

95 0035908 05/15/91 05/16/91

V131 HC6

<u>Parameter</u>

<u>Units</u>

MDL FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Chromium, Hexavalent

mg/L

0.01

ND

MDL

Method Detection Limit

ND

W. R. GRACE

<u>Parameter</u>

PACE Project Number: 810516512

PACE Sample Number: Date Collected:

Date Received:

95 0035916

05/15/91

05/16/91

V131 HC6 <u>Units</u> MDL\_ FD

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent mg/L 0.01 ND

MDL Method Detection Limit

W. R. GRACE

PACE Project Number: 810516512

PACE Sample Number: Date Collected:

95 0035924

05/15/91

Date Received:

05/16/91 V131 HC6

<u>Parameter</u>

<u>Units</u> MDL FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L

0.01 ND

MDL

Method Detection Limit

PACE Project Number: 810519500

00079

PACE Sample Number: Date Collected: Date Received:

95 0037056 05/19/91 05/19/91 V140 TOC10

<u>Parameter</u>

<u>Units</u> MDL FS\_\_\_\_

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite Phosphorus, Total

0.20 mg/L 0.3 mg/L ND

4.0 J

Total Organic Carbon

0.10 mg/L

2.1 u pm 7/18/91

MDL

Method Detection Limit

PACE Project Number: 810519500 00080

PACE Sample Number:

Date Collected:

Date Received:

Parameter

Units

MDL FS

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite mg/L 0.20 3.8 5
Phosphorus, Total mg/L 0.3 ND
Total Organic Carbon mg/L 0.10 3.4 U

MDL Method Detection Limit
ND Not detected at or above the MDL.

PACE Project Number: 810519500

00081

PACE Sample Number: 95 0037072 Date Collected: 05/19/91 Date Received:

05/19/91 V131 TOC10

<u>Parameter</u> <u>Units</u> MDL FD

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Nitrogen, Nitrate plus Nitrite 3.8 J 0.20 mg/L Phosphorus, Total mg/L 0.3 ND Total Organic Carbon mg/L 0.10 2.2

pm 7/18/91

MDL Method Detection Limit

PACE Project Number: 810519500

00082

PACE Sample Number: Date Collected: Date Received:

95 0037080 05/19/91 05/19/91

<u>Parameter</u>

V131 TOC10 <u>Units</u> MDL\_ FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

0.2 J pm 7/18/91 Nitrogen, Nitrate plus Nitrite Phosphorus, Total mg/L 0.02 mg/L 0.3 ND Total Organic Carbon .75 mg/L 0.10

MDL

Method Detection Limit

ND

# PACE Project Number: 810519500

00083

					0000
	PACE Sample Number: Date Collected:			95 0037099 05/19/91	
	Date Received:			05/19/91	
	<u>Parameter</u>	<u>Units</u>	MDL	V140 TDS10 FS	
-	INORGANIC ANALYSIS				•
•	INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate	mg/L mg/L mg/L mg/L mg/L	1 10 0.1 0.2 1 5	87 69.4 ND 14.4 330 35.4 J	~ 7/18/91

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Project Number: 810519500

00084

PACE Sample Number: Date Collected: Date Received:  Parameter	<u>Units</u>	MDL	95 0037102 05/19/91 05/19/91 V131 TDS10 FS
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate	mg/L mg/L mg/L mg/L mg/L	1 10 0.1 0.2 1 5	87 67.3 ND 15.3 312 38.5 J pon 7/19/91

MDL

Method Detection Limit Not detected at or above the MDL. ND

# PACE Project Number: 810519500

	PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0037110 05/19/91 05/19/91 V131 TDS10 FD	00085
	INORGANIC ANALYSIS				
*	INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate	mg/L mg/L mg/L mg/L mg/L mg/L	1 10 0.1 0.2 1 5	87 69.6 ND 15.3 314 36.7 J	on 7/18/91

MDL

Method Detection Limit Not detected at or above the MDL. ND

# PACE Project Number: 810519500

PACE Sample Number: Date Collected: Date Received:			95 0037129 05/19/91 05/19/91 V131 TDS10	00086
<u>Parameter</u>	<u>Units</u>	MDL	<u>FB</u>	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved Sulfate	mg/L mg/L mg/L mg/L mg/L	1 1 0.1 0.2 1 5	2 ND ND ND ND ND	7/18/91

MDL ND

Method Detection Limit Not detected at or above the MDL.

W.R.Grace

PACE Project Number: 810531510

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	0: 0:	5 0041045 5/28/91 5/31/91 C145	00087
INORGANIC ANALYSIS				A 1181
INDIVIDUAL PARAMETERS Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon	mg/L mg/L mg/L	0.02 0	4.7 .03 了 55	T.

MDL Method Detection Limit

W.R.Grace	PACE Project	Number:	810531510		00088	
PACE Sample Number: Date Collected: Date Received: Parameter		<u>Units</u>	MDL	95 0041053 05/28/91 05/31/91 UC72	00000	
INORGANIC ANALYSIS						-
INDIVIDUAL PARAMETERS Chloride Nitrogen, Nitrate plus N Total Organic Carbon	itrite	mg/L mg/L mg/L	10 0.2 0.10	186 3.5 J	71/8/21	

MDL Method Detection Limit

W.R.Grace

PACE Project Number: 810531510

00089

PACE Sample Number: 95 0041061 Date Collected: 05/28/91 Date Received: 05/31/91 7/18/91 <u>Parameter</u> <u>Units</u> MDL UC141

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Chloride mg/L 10 112 Nitrogen, Nitrate plus Nitrite Total Organic Carbon 0.03 5 mg/L 0.02 mg/L 0.10 1.5

MDL Method Detection Limit W.R.Grace

PACE Project Number: 810531510

00090

 PACE Sample Number:
 95 0041070

 Date Collected:
 05/28/91

 Date Received:
 05/31/91

 Parameter
 Units
 MDL
 UC112

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Chloride mg/L 10 196 Nitrogen, Nitrate plus Nitrite mg/L 0.02 0.04  $\circlearrowleft$  Total Organic Carbon mg/L 0.10 18.6

MDL Method Detection Limit

W.R.Grace	PACE Project	Number:	810531510		0.0001
PACE Sample Number: Date Collected: Date Received: Parameter		<u>Units</u>	_MDL_	95 0041088 05/28/91 05/31/91 UC18	00091
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS Chloride Nitrogen, Nitrate plus N Total Organic Carbon	itrite	mg/L mg/L mg/L	10 0.2 0.10	650 3.2 <b>5</b>	Low 4/18/01/

MDL Method Detection Limit

# PACE Project Number: 810519500

PACE Sample Number: Date Collected: Date Received:			95 0037170 05/19/91 05/19/91 V140HC 10	00121
<u>Parameter</u>	<u>Units</u>	MDL	FS	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Chromium, Hexavalent	mg/L	0.01	ND	
PACE Sample Number: Date Collected: Date Received:			95 0037188 05/19/91 05/19/91 V131HC 10	
Parameter	<u>Units</u>	MDL	FS	
INDIVIDUAL PARAMETERS Chromium, Hexavalent	mg/L	0.01	ND	
PACE Sample Number: Date Collected: Date Received:			95 0037196 05/19/91 05/19/91 V131HC 10	
<u>Parameter</u>	<u>Units</u>	MDL	FD	
INDIVIDUAL PARAMETERS Chromium, Hexavalent	mg/L	0.01	ND	
PACE Sample Number: Date Collected: Date Received:			95 0037200 05/19/91 05/19/91 V131HC 10	
<u>Parameter</u>	<u>Units</u>	MDL	FB TO	
INDIVIDUAL PARAMETERS Chromium, Hexavalent	mg/L	0.01	ND	
MDL Method Detection Limit ND Not detected at or above the M	DL.			



### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/11/91

Chemical Analyses Performed By . PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limits in the Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Ten treatment system samples were collected (both UniFirst and Grace) and submitted for analysis to PACE, Inc. on May 11, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. Although the narrative stated that S1-14 was used for the matrix spike/matrix spike duplicate, V197V2FS and V154V2FS were also used as QC samples. All three sets were validated. All Grace samples were collected in duplicate and analyzed.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
V131V2FD V131V2FS V154V2FD V154V2FS V197V2FS V197V2FD S1-14 S1-14DUP S1-14TB	3430 3429 3437 3438 3435 3436 3371 3372 3374	05/11/91 05/11/91 05/11/91 05/11/91 05/11/91 05/11/91 05/11/91 05/11/91
S4-12	3366	05/11/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All sample analyses met holding times.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

#### A. Initial

Initial calibration criteria were met with the exception of 2-butanone (Instr. G) which had an average RRF of 0.031 and %RSD of 31.6 and carbon tetrachloride (Instr. J) which had an average RRF of 0.088. Detection limits for 2-butanone (Instr. G) and carbon tetrachloride (Instr. J) were rejected.

### B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/14 (Instr. G)	13:23	2-Butanone	0.028	(0.10)
5/16 (Instr. G)	11:53	2-Butanone	0.028	(0.10)
5/16 (Instr. J)	13:51	Chloromethane 2-Hexanone		34.7 (25) 39.9 (25)

#### () Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.



#### IV. Blanks

Methylene chloride was detected in the VBLK 02 at 1 ppb. All other blanks were acceptable. Methylene chloride results were qualified as less than the reported values (U).

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria for S1-14 and V197V2FS. Compounds not meeting criteria for V154V2FS are summarized below.

Compound	Recovery			<u>Criteria</u>	
Trichloroethene	55	(MS)			71-120
			RPD	31	14
1,1-Dichloroethene			RPD	21	14
Toluene			RPD	15	13

As per criteria, only the unspiked sample data were qualified (V154V2FS and V154V2FD); however, the end used of the data should be cautious of the trichloroethene results for V131V2FS and V131V2FD since these samples were analyzed with this MS/MSD.

### VII. Field Duplicates

Duplicate results are summarized below.

<u>Sample</u>	Compound Sam	p. Conc.	Dup. Conc.	MS/MSD*
S1-14	Tetrachloroethene	2900	3100	2900/3100
V131V2FS	Vinyl Chloride Acetone Trichloroethene Tetrachloroethene 1,2-DCE	1100 100 310 16J 1200	1100 ND 310 ND 1200	
V154V2FS	t-1,2-Dichloroethe Trichloroethene	ene 420 450	420 440	370/380 590/640



<u>Sample</u>	Compound	Samp. Conc.	Dup. Conc.	MS/MSD*
V197V2FS	Vinyl Chloride Acetone	2000 30 J	1200 ND	2000/2000 24 J/ND
	t-1,2-Dichloroe Trichloroethene		1400 370	2000/1900
	Tetrachloroether Toluene		11 J 13 J	ND/ND
	Ethylbenzene	27 J	ND	26 J/23 J

Results are acceptable with the modifications as noted below:

V131V2FS Acetone Rejected.
Tetrachloroethene Rejected.

V197V2FS Vinyl choride 1200 J.
Acetone Rejected.
Trichloroethene 220 J 370 J
Tetrachloroethene Rejected.
Ethylbenzene 27J 50UJ 26J 23J

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

### IX. TCL Compound Identification

Target compounds were properly identified.

### X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data.

### XI. Tentatively Identified Compounds

No TICs were detected.

### XII. System Performance

System performance was acceptable.



#### XIII. Overall Assessment of Data for a Case

Detection limits for 2-butanone (Instr. G) and carbon tetrachloride (Instr. J) were rejected.

Trichloroethene data for V154V2FS and V154V2FD were estimated. As per criteria, only the unspiked sample data were qualified (V154V2FS and V154V2FD); however, the end used of the data should be cautious of the trichloroethene results for V131V2FS and V131V2FD since these samples were analyzed with this MS/MSD.

Field duplicate results are acceptable with the modifications as noted below:

V131V2FS Acetone Rejected
Tetrachloroethene Rejected

V197V2FS Vinyl choride 1200 J.
Acetone Rejected.
Trichloroethene 220 J 370 J
Tetrachloroethene Rejected.
Ethylbenzene 27J 50UJ 26J 23J

All other data were accepable.

VOLAT : ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

\_ab Name: PACE Contract:

1---0-0-0-2-0----

Matrix: (soil/water) WATER Lab Sample ID: 3371

ample wt/vol: 5. (g/mL) ML Lab File ID: G2915

Level: (low/med) LOW Date Received: 5/11/91

"Moisture: not doc.100. Date Analyzed: 5/15/91

plumn: (pack/cap) PACk Dilution Factor: 20.00

CAS NO.	COMPOUND			ON UNITS: /kg) UG/L	Ω	
7.1-07-7	Chloromethane _			200.	: U	- :
1 74-07-3				200.	: U	,
1 75-01-1	Bromomethane Vinyl Chloride_			200.	: U	'
75-01-4	Chloroethane			200.	: U	,
75-00-3	Methylene Chlor			100.	; U	,
! 67-61-1	Acetone	roe		100.	. U	,
! 25-15-0:	Carbon Disulfide			100.	:0	!
. 75-75 d	1,1-Dichloroeth			100.	: U	
. 75-34-3	1.1-Dichloroeth			100.	:0	•
	1,2-Dichloroethe				10	;
67-66-3	Chloroform	-112 . 0000.		100.	: U	÷
107-06-2	1,2-Dichloroetha			100.	: U	i
1 78-93-3-	2-Butanone	*''~		200.	WR	:
71-55-6	1,1.1-Trichloroe	thane		100.	10	
56-23-5-	Carbon Tetrachlo	ride		100.	ΙÜ	;
1 108-05-4-	Vinyl Acetate _			200.	Ü	:
1 75-27-4-	Bromodichloromet	hane		100.	l U	;
78-87-5-	1,2-Dichloroprop	ane		100.	١U	1
110061-01-5-	cis-1,3-Dichlord	propene		100.	١Ū	:
1 79-01-6-	Trichloroethene	·	:	100.	۱.	;
124-48-1-	Dibromochloromet	hane	:	100.	:U	;
79-00-5-	1,1,2-Trichloros	thane	:	100.	١U	;
: 71-43-2-	Benzene		t	100.	١U	;
	Trans-1,3-Dichle	ropropene	: ;	100.	١U	;
1 75-25-2-	Bromoform		;	100.	! U	;
	4-Methyl-2-Penta			200.	¦υ	;
: 591-78 <b>-6-</b>	2-Hexanone		;	200.	: U	;
127-18-4-	Tetrachloroethen	e		2900.	;	;
	1,1,2,2-Tetrachl			100.	١U	;
108-88-3-	Toluene		:	100.	: U	:
108-90-7-	Chlorobenzene		;	100.	:U	;
100-41-4-	Ethylbenzene		!	100.	l U	-
100-42-5-	Styrene		;	100.	:U	:
1830-20-7-	Xylene(total)		!	100.	;U	;
~~~~~~			i		. i	<b>-</b> i

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# VOLAT' E ORGANICS ANALYSIS DATA SHEET

TEN .TIVELY IDENTIFIED COMPOUNDS

ab Name: PACE ab Code: PACE Contract:

SDG No.:

atrix: (soil/water) WATER

Case No.: EPC SAS No.:

Tample wt/vol: 5. (g/mL) ML

Lab Sample ID: 3371 Lab File ID: G2915

\_evel: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Dolumn: 'pack/cap' PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: (ug/L or ug/kig) UG/L

			~	
CAS NUMBER	COMPOUND NAME	; ! RT	EST. CONC.	. α
		*======		;====;
1				!!
				!!
·				!!
4				!!
5;				!!
7				;;
8.		'		<u>'</u>
0		'		!:
10				· :
11				:: :
12			~~~~~~~	: :
10				
1.1			~~~~~~~~	
15				;
1 =		;		;;
		;		
18				
19.		;		
- 5A	1			;
21		1		:
22.		;	;	
13.	;	;	;	;
241	1			
76			,	
26		!		
27		1		
28		!		!
29		!		!
20		!	;	!
		!	/	!

FORM I VOA-TIC

1/87 Rev.

### VOL/ LE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

: : \$1-14DUP : \_\_00026\_\_\_\_:

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3372

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2912

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/15/91

Column: (pack/cap) PACK Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTR (ug/L or			α	
	Chloromethane		; !	200.	; ; U	; !
1 74-83-9	Bromomethane		;	200.	: U	i
75-01-4	Vinyl Chloride		;	200.	: 0	i
75-00-3	Chloroethane		:	200.	: U	i
75-09-2	Methylene Chlo	ride	:	100.	; U	
67-64-1	Acetone		:	200.	10	
75-15-0	Carbon Disulfi	de	· ;	100.	10	i
75-35-4	1,1-Dichloroet	hene		100.	١U	
1 75-34-3	1,1-Dichloroet	hane		100.	: U	
: 540-59-0	1,2-Dichloroet	hene (total)	:	100.	ŧU	;
: 67-66-3	_:		<b></b> .	100.	١U	!
1 107-06-2	1.2-Dichloroet	hane		100.	:U _	1
: 78-93-3	2-Butanone		;	200.	JY R	1
1 71-55-6	·1,1,1-Trichlor	oethane	;	100.	:U `	:
: 56-23-5	Carbon Tetrach	loride	:	100.	:U	1
108-05-4	Vinyl Acetate		:	200.	١U	1
1 75-27-4	Bromodichlorom	ethane	;	100.	:U	;
1 78-87-5	1,2-Dichloropr	opane		100.	:U	:
110061-01-5	cis-1,3-Dichlo	ropropene	:	100.	:U	- 1
1 79-01-6	Trichloroethen	=	;	100.	١U	;
124-48-1	Dibromochlorom	ethane	;	100.	:U	;
1 79-00-5	1,1,2-Trichlore	bethane	;	100.	:U	;
	Benzene			100.	١U	!
	Trans-1,3-Dich	• •		100.	¦U	;
	Bromoform		!	100.	١U	1
108-10-1	4-Methyl-2-Pen	tanone	;	200.	U	-
: 591-78-6	2-Hexanone		!	200.	:U	;
12/-18-4	Tetrachloroethe	ene'	;	3100.	1	}
1 79-34-5	1,1,2,2-Tetrac			100.	ָוֹט	- 1
108-88-3			!	100.	ΙU	i
108-90-7	Chlorobenzene		!	100.	!U	-
100-41-4	Ethylbenzene		!	100.	:U	;
100-42-5	Styrene		!	100.	!U	:
1330-20-7	Xylene(total)		:	100.	:U	
i			'		. i	_ ;

## VOL THE ORGANICS ANALYSIS DATA SHEET

TE.. TATIVELY IDENTIFIED COMPOUNDS

Case No.: EPC SAS No.:

S1-14DUP

EPA SAMPLE NO.

Lab Name: PACE

Lab Code: PACE

Contract:

00027

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3372

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2912

Level: (low/med) LOW

Date Received: '5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACk

Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: (ug/L or ug/kg) UG/L

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17.		!!
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<u></u>		<u>'</u> '
23.		<b>'</b>
7.1		;;
		<u>'</u>
		<u>'</u>
27		<u> </u>
28		<u> </u>
29		· :
30		

### VOL, LE ORGANICS ANALYSIS DATA SHEET

S1-14TB

TPA SAMPLE NO.

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3374

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2908

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/15/91

Column: (pacl/cap) PACK Dilution Factor: 1.00

		C	ONCENTR	ATION U	VITS:		
	CAS NO.	COMPOUND	ug/L or	ug/Kg)	UG/L	C	)
;				;			;
;		Chloromethane		;	10.	١U	;
;	74-83-9	Bromomethane		;	10.	١U	;
;	75-01-4	Vinyl Chloride		†	10.	١U	;
:	75-00-3	Chlorcethane		1	10.	۱U	;
;	75-09-2	Methvlene Chloride		- 1	5.	: U	:
;	67 <i>-</i> 64-1	Acetone		!	10.	ΙU	;
;	/5-15-0	Carbon Disultide		i	5.	រប	1
- }	75-35-4	1.1-Dichloroethene		:	5.	١U	:
;	75-34-3 <sup>,</sup>	1,1-Dichloroethane		;	5.	: U	:
;	540 <i>-</i> 59-0	1.2-Dichloroethene	(total.	) ;	, 5 <b>.</b>	ŧυ	;
:	67-66-3·	Chloroform		:	5.	١U	;
:	107-06-2	1,2-Dichloroethane			5.	10 0	, :
1	78-93-3-	2-Butanone		!	10.	HR	<b>\</b> 1
i	71 -55 <b>-</b> 6 -	1,1,1-Trichloroeth.	ane	!	5.	١U	
:	56-23-5-	Carbon Tetrachlori	de	;	5.	: U	;
:	108-05-4-	Vinyl Acetate		1	10.	١U	;
:	75-27-4-	Bromodichlorometha	ne	;	5.	١U	- 1
ļ	78 <i>-</i> 87 <i>-</i> 5-	1,2-Dichloropropane		;	5.	ΙU	;
110	0061-01-5-	cis-1,3-Dichloropro	opene	;	5.	: U	;
ì	79-01-6-	Trichloroethene		;	5.	!U	;
1	124-48-1-	Dibromochloromethar	ne		5.	:U	;
	79-00-5-	1,1,2-Trichloroetha			5.	!U	-
;	71-43-2-	Benzene		;	5.	!U	ł
110	0061-02-6-	Trans-1,3-Dichlorog	ropene	;	5.	:U	!
;	75-25-2-	Bromoform		;	5.	١U	;
!	108-10-1-	4-Methyl-2-Pentanor	e	;	10.	١U	;
;	591-78-6-	2-Hexanone		;	10.	: U	÷
i	127-18-4-	Tetrachloroethene _		;	5.	; U	- 1
!	79-34-5-	1,1,2,2-Tetrachloro	ethane	:	5.	:U	1
:	108-88-3-	Toluene		;	5.	١u	;
:	108-90-7-	Chlorobenzene		!	5.	:υ	;
:	100-41-4-	Ethylbenzene		!	5.	:U	;
	100-42-5-	Styrene		!	5.	l U	!
: 1	330-20-7-	Xylene(total)		!	5.	U	:
·				'		· i	<sup>;</sup>

## 1 E

VOL' TLE ORGANICS ANALYSIS DATA SHEET TE.. (ATIVELY IDENTIFIED COMPOUNDS

;		i
ļ	S1-14TB	;
;		:
;	S1-14TB	

EPA SAMPLE NO.

Lab Name: PACE

Contract:

00033 SDG No.:

Matrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2908

Lab Sample ID: 3374

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACk

Number TICs found: 0

Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	: : RT	: EST. CONC.	-
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4		!		
		!		!
		: <b></b> !		!
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<u> </u>		¦		¦
10		;		<u> </u>
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1.1		' <b>'</b>		
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16;		;		
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			!	:
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21				
5.4	;			;
	i		i	;
7/			:	!
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-c				!
20				;
		:		:
'			'	'

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s4-1020037

'b Name: PACE Contract:

ω Code: PACE Case No.: EPC SAS No.: SDG No.:

:rix: (soil/water) WATER Lab Sample ID: 3366

imple wt/vol: 5. (g/mL) ML Lab File ID: G2925

rel: (low/med) LOW Date Received: 5/11/91

Moisture: not dec.100. Date Analyzed: 5/16/91

lumn: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

		7	
74-87-3	Chloromethane	100.	U
	Bromomethane	100.	lΰ
75-01-4	Vinyl Chloride	100.	lσ
75-00-3	Chloroethane	100.	Ū
	Methylene Chloride	50.	Ū
67-64-1	Acetone	100.	Ū
	Carbon Disulfide	50.	Ū
75-35-4	1,1-Dichloroethene	50.	Ū
75-34-3	1,1-Dichloroethane	50.	Ū
540-59-0	1,2-Dichloroethene (total)	50.	บ
67-66-3	Chloroform	50.	บ
107-06-2	1,2-Dichloroethane	50.	Ū
78-93-3	2-Butanone	100.	UR
	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	Ū
108-05-4	Vinyl Acetate	100.	Ū
75-27-4	Bromodichloromethane	50.	Ū
78-87-5	1,2-Dichloropropane	50.	U
.0061-01-5	cis-1,3-Dichloropropene	50.	Ü
79-01-6	Trichloroethene	50.	Ū
124-48-1	Dibromochloromethane	50.	Ū
79-00-5	1,1,2-Trichloroethane	50.	Ū
71-43-2	Benzene	50.	U
.0061-02-6	Trans-1,3-Dichloropropene	50.	Ü
75-25-2	Bromoform	50.	Ū
108-10-1	4-Methyl-2-Pentanone	100.	Ü
591-78-6	2-Hexanone	100.	ltī
127-18-4	Tetrachloroethene	1400.	1
	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	Ü
108-90-7	Chlorobenzene	50.	Ŭ
100-41-4	Ethylbenzene	50.	Ü
100-42-5	Styrene	50.	Ü
2220 20 7	Xylene(total)	50.	บั

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

ib Name: PACE

Contract:

54-12 00038

) Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

'trix: (soil/water) WATER

Lab Sample ID: 3366

\_\_ple wt/vol:

5. (g/mL) ML

Lab File ID: G2925

rel: (low/med) LOW

Date Received: 5/11/91

Moisture: not dec.100.

Date Analyzed: 5/16/91

· lumn: (pack/cap) PACK

"umber TICs found: 0

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.		_ {		
·		_		
5.	<del></del>	-	J <del></del>	
0		_		
/·		_		
8.		-		
9		_	·	
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13.		-	<del></del>	ļ <del></del>
15.	<del></del>	-		
16				
1/.				
10.	<del></del>			
19.	<del></del>	-	<del></del>	
41.				
22.				
4J•		-		
24		-		
40.	<del></del>			
• / • (				
28.		.		
30.	<del></del>			
· · ·		·]]	]	

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### VOL/ 'LE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1 VISIVAFD

Lab Name: PACE Contract:

SDG No.:

Lab Sample ID: 3430

Matrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2926

Level: (low/med) LOW

Date Received: 5/11/91

! Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO.		ug/L or ug/		α
	Ob 1			
1 74-87-3	Chloromethane	<u>!</u>	100.	וט ו
1 /4-83-9	Bromomethane	<u>-</u> !	100.	iu i
1 /5-01-4	Vinyl Chloride	!	1100.	
75-00-3	Chloroethane	'	100.	ו ו
75-09-2	Methylene Chloride		50.	!U :
67-64-1	Acetone		100.	; U ;
1 75-15-0	Carbon Disulfide	:	50.	:U :
1 75-35-4	1,1-Dichloroethene		50.	: U
1 75-34-3	1,1-Dichloroethane	!	50.	:U :
1 540-59-0	1,2-Dichloroethene	(total):	1200.	1
1 67-66-3	Chloroform		50.	:U :
107-06-2	1,2-Dichloroethane		50.	: ::
1 78-93-3	2-Butanone	:	100.	WR:
1 71-55-6	1,1,1-Trichloroeth	ane:	50.	:ບໍ່:
1 56-23-5	Carbon Tetrachloric	de:	50.	: U:
108-05-4	Vinyl Acetate	;	100.	: :
1 75-27-4	Bromodichlorometha	ne :	50.	:U :
1 78-87-5	1,2-Dichloropropane		50.	10 ;
110061-01-5	cis-1,3-Dichloropro	pene :	50.	:U :
79-01-6	Trichloroethene		310.	1 1
124-48-1	Dibromochloromethan	ne :	50.	10 1
79-00-5	1,1,2-Trichloroetha	ine !	50.	: U
71-43-2			50.	
110061-02-6	Trans-1,3-Dichlorop	ropene	50.	iu i
75-25-2			50.	:0 :
108-10-1	4-Methyl-2-Pentanor	ne :	100.	:U :
591-78-6	2-Hexanone	```'	100.	υ :
127-18-4	Tetrachloroethene	·;	50.	10 :
. 79-34-5	1,1,2,2-Tetrachlord	ethane !	50.	
. 109-89-3	Toluene	!	50.	: U
108-90-7	Chlorobenzene	:	50.	10 :
100 30 7	Ethylbenzene		50.	:U :
100 41-4	E CHY LUEILLE THE THE	;	50.	10 1
100-42-0	Styrene	;	50.	10 1
1330-20-/	xyrene(cocar)		. بان	! !
		'_		''

#### VOLATILE ORGANICS ANALYSIS DATA SHEET TE' ATIVELY IDENTIFIED COMPOUNDS

13IVA FO ₹191FD

EPA SAMPLE NO.

Lab Name: PACE

Contract:

sp60N-1.5

Matrix: (soil/water) WATER Lab Sample ID: 3430

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2926

Level: (low/med) LOW

Date Received: 5/11/91

! Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

Number TICs found: 0

CAS NUMBER :	COMPOUND NAME	: : RT !======	: EST. CONC.	: : 0
1		•	· !	•
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3i 4.			!	¦
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		!	!	
8:			!	·
		!	!	!
				<u>'</u>
16				'
			' <del>-</del>	'
15;				
16				!
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10 '				
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21				
22		;		
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75				:
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				'
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29				;
30		;		:
				;

### VOLA LE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

V131 V2 F3

Lab Name: PACE

Contract:

00122 SDG No.:

4/ 6/24/9/

Matrix: (soil/water) WATER

Lab Sample ID: 3429

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2922

Level: (low/med) LOW

Date Received: 5/11/91

" Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND	CONCENTRATION UNITS:	Q
74-87-3Chloromethans	100	!!!

		!
74-87-3Chloromethane	_ 100.	:U
74-83-9Bromomethane	_ 100.	ו ו
75-01-4Vinyl Chloride	_ 1100.	
75-00-3Chloroethane	_ 100.	וט
75-09-2Methylene Chloride		: <b>:</b> #U_ :
67-64-1Acetone	_; 100.	: R:
75-15-0Carbon Disulfide	_; 50.	: U :
75-35-41,1-Dichloroethene	_; 50.	:U :
75-34-31,1-Dichloroethane		; U ;
<pre>540-59-01,2-Dichloroethene (total)</pre>		1 1
67-66-3Chloroform	. 50.	: 0 :
107-06-21,2-Dichloroethane	;; 50.	"U'~ "
78-93-32-Butanone	100.	: Y ZE:
71-55-61,1,1-Trichloroethane	. 50.	: 0 :
56-23-5Carbon Tetrachloride	.: 50.	: U ;
108-05-4Vinyl Acetate	100.	:U :
: 75-27-4Bromodichloromethane	.: 50.	: U :
78-87-51,2-Dichloropropane	.: 50.	:U :
110061-01-5cis-1,3-Dichloropropene	; 50.	:ម :
79-01-6Trichloroethene	310.	: :
124-48-1Dibromochloromethane	50.	; U ;
79-00-51,1,2-Trichloroethane	50.	: U :
71-43-2Benzene	50.	: U:
10061-02-6Trans-1,3-Dichloropropene	50.	:U :
75-25-2Bromoform	50.	: U :
108-10-14-Methyl-2-Pentanone	100.	: 0 :
591-78-62-Hexanone	100.	:U _ :
: 127-18-4Tetrachloroethene	16.	: 3R :
79-34-51,1,2,2-Tetrachloroethane	50.	ານ ີ້າ
108-88-3Toluene	50.	:U :
108-90-7Chlorobenzene	50.	:U :
100-41-4Ethylbenzene	50.	:U :
100-42-5Styrene	50.	: U:
1330-20-7Xylene(total)	1 50.	:U :
	!	. 1 1

#### 1 E

### VOLATILE ORGANICS ANALYSIS DATA SHEET TE' TATIVELY IDENTIFIED COMPOUNDS

	_
131 V2 FS	1
<b>∀131ES</b>	:

EPA SAMPLE NO.

Lab Name: PACE

Contract:

**₽**₽0=1 120-3:

Matrix: (soil/water) WATER Lab Sample ID: 3429

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2922

\_evel: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pach/cap) PACK

Dilution Factor: 10.00

### CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

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•	12				! ;
	13				!!
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	17:				! :
	18:		!		!!
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### VOLA 'E ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VISAVOFS V154FS

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: 00140 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3437

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2928

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/16/91

Solumn: (pack/cap) PACk Dilution Factor: 5.00

CAS NO.	СОМРОИМО	CONCENTR			Q	
71.07.0	053			 -^		:
1 74-87-3-	Chloromethane		!	50.	: U	i
74-83-9-	Bromomethane		<u> </u>	50.	:U	i
/5-01-4-	Vinyl Chloride		<u>!</u>	50.	١U	i
75-00-3-	Chloroethane		<u>:</u>	50.	: U	i
75-09-2-	Methylene Chloric	le	!	25.	! U	į
67-64-1-	Acetone Carbon Disulfide		!	50.	; U	i
75-15-0-	Carbon Disulfide_		!	25.	! U	:
	1,1-Dichloroether			25.	ΙU	i
	1,1-Dichloroethar			25.	; U	;
1 540-59-0	1,2-Dichloroether	e (total.	)¦	420.	1	ł
: 67 <b>-</b> 66-3	Chloroform		;	25.	; U	;
107-06-2	1,2-Dichloroethan	e	!	25.	:U a	;
1 78-93-3	2-Butanone		;	50.	WR	;
: 71-55-6	1.1.1-Trichloroet	hane	:	25.	: U	1
1 56-23-5	Carbon Tetrachlor	ıde	;	25.	; U	
108-05-4	Vinyl Acetate			50.	:U	- 1
1 75-27-4	Bromodichlorometh	ane	;	25.	:U	;
1 78-87-5	1,2-Dichloropropa	ne	:	25.	: U	1
110061-01-5	cis-1.3-Dichlorop	ropene	1	25.	:U	;
1 79-01-6	Trichloroethene		!	450.	: 5	1
124-48-1	Dibromochlorometh	ane	:	25.	: U	:
1 79-00-5	1,1,2-Trichloroet	hane	;	25.	! U	1
71-43-2	Benzene		;	25.	:U	;
:10061-02-6	Trans-1,3-Dichlor	opropene		25.	: U	;
	Bromoform			25.	: U	-
108-10-1	4-Methyl-2-Pentan	one	;	50.	:U	1
591-78-6	2-Hexanone		;	50.	:U	
127-18-4	Tetrachloroethene		:	25.	١Ü	1
	1,1,2,2-Tetrachlo			25.	:U	1
108-88-3	Toluene	<del>-</del>		25.	ΙÜ	:
108-90-7	Chlorobenzene			25.	ΙŪ	1
100-41-4	Ethylbenzene		;	25.	;U	1
	Styrene			25.	10	:
1330-20-7	Xylene(total)		;	25.	10	;
!	.,,		;		-	İ
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1 E

#### VOLATILE ORGANICS ANALYSIS DATA SHEET TE ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

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	<del>∀154FG</del> -	¦
		•

Lab Name: PACE

Contract:

00 \$DE 1 No . :

datrix: (soil/water) WATER

Lab Sample ID: 3437

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2928

\_evel: (low/med) LOW

Date Received: 5/11/91

; Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

. CAS NUMBER	COMPOUND NAME	: : RT	EST. CONC.	: : Q
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VIS-W2-FD V15-1FD

Lab Name: PACE Contract:

Contract: 00133

Matrix: (soil/water) WATER Lab Sample ID: 3438

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2930

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/16/91

Column: (pack/cap) PACK Dilution Factor: 5.00

				ATION U			
CAS NO.	COMPOUND	(ug/L	or	nā/kā)	UG/L	Ω	
!				<u>-</u>			-;
1 74-87-3	Chloromethane _			;	50.	; U	1
1 74-83-9	Bromomethane			;	50.	١U	;
75-01-4	Vinyl Chloride_			!	50.	· <del>-</del>	1
75-00-3	Chloroethane			;	50.	_	ŀ
1 75-09-2	Methylene Chlor	ıde		1	25.	: U	;
67-64-1	Acetone Carbon Disulfido			!	50.	l U	1
1 75-15-0	Carbon Disulfid	e		:	25.	:U	1
1 75-35-4	1,1-Dichloroeth	ene		:	25.	: U	1
1 75-34-3	1,1-Dichloroeth	ane		:	25.	: ບ	1
: 540-59-0	1,2-Dichloroeth	ene (tota	al)	. !	420.	<b>:</b>	!
: 67-66-3	Chloroform			;	25.	ŧυ	1
1 107-06-2	$\cdot$ 1.2-Dichloroeth $\epsilon$	ane		- !	25.	; U _	;
1 78-93-3	2-Butanone			;	50.	H R	<b>;</b>
1 71-55-6	1,1,1-Trichloroe	thane		;	25.	10	!
: 56-23-5	Carbon Tetrachlo	oride		;	25.	10	1
108-05-4	Vinyl Acetate			;	50.	i U	:
1 75-27-4	Bromodichloromet	thane		;	25.	i Ü	1
: 78-87-5	1,2-Dichloroprop	oane		;	25.	; U	;
110061-01-5	cis-1,3-Dichlord	poropene			25.	ΙÜ	1
79-01-6	Trichloroethene			;	440.	15	1
124-48-1	Dibromochloromet	tane		:	25.	iu	1
79-00-5	1,1,2-Trichloroe	thane		;	25.	: 0	Ì
1 71-43-2	Benzene			;	25.	: 0	!
10061-02-6	Benzene Trans-1,3-Dichlo	rapronen		;	25.	: U	:
75-25-2	Bromoform		-	;	25.	: U	
	4-Methyl-2-Penta	nane		:	50.	:υ	•
591-78-6	2-Hexanone			;	50.	: U	!
127-18-4	Tetrachloroethen			;	25.	: U	
	1,1,2,2-Tetrachl				25.	: U	!
108-88-3	Toluene	0, 02 0.10.1	•	<u>;</u>	25.	:0	:
108-90-7	Chlorobenzene			;	25.	וט	1
100-41-4	Ethylbenzene			;	25.	10	
100-42-5	Styrene			;	25.	. U	:
1330-20-7	Xylene(total)			;	25.	. U	· !
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#### 1E VOLATILE ORGANICS ANALYSIS DATA SHEET TE ATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Contract: Lab Name: PACE

00 153 G No .: Lab Code: PACE Case No.: EPC SAS No.:

Lab Sample ID: 3438 Matrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2930

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/16/91

Column: (pack/cap) PACK Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

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i 	CAS NUMBER	COMPOUND NAME	: ! RT	EST. CONC.	; Q ;
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FORM I VOA-TIC

### VOL4 LE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

Lab Name: PACE

Contract:

00157<sub>SDG No.:</sub>

Matrix: (soil/water) WATER

Lab Sample ID: 3435.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2646

Level: (low/med) LOW

Date Received: 5/11/91

% Moisture: not dec.100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS.

CAS NO	CONCENTRAT. COMPOUND (ug/L or ug/L or		Q
74-87	-3Chloromethane	100.	; U ;
1 74-83	3-9Bromomethane	100.	ίŪ ;
1 75-01	-4Vinyl Chloride	1 2000.	;
1 75-00	-3Chloroethane	100.	ו טו
1 75-09	-2Methylene Chloride	: 50.	: U:
: 67-64	-1Acetone	; 30.	1 1R:
1 75-15	-OCarbon Disulfide	: 50.	: U :
: 75-35	-41,1-Dichloroethene	.; 50.	; U ;
1 75-34	-31,1-Dichloroethane	.1 50.	:U :
: 540-59	-01,2-Dichloroethene (total)	1900.	1 :
: 67-66	-3Chloroform	50.	; U ;
107-06	-21,2-Dichloroethane	; 50.	:0 :
1 78-93	-32-Butanone	100.	iu i
	-61,1,1-Trichloroethane		וט ב
56-23	-5Carbon Tetrachloride	50.	WR:
108-05	-4Vinyl Acetate	100.	:U :
1 75-27	-4Bromodichloromethane	50.	:U :
1 78-87	-51,2-Dichloropropane	50.	:0 :
110061-01	-5cis-1,3-Dichloropropene	50.	10 1
79-01	-6Trichloroethene	220.	: 3 :
124-48	-1Dibromochloromethane	50.	; U ;
79-00	-51,1,2-Trichloroethane		!U !
	-2Benzene	50.	; U ;
	-6Trans-1,3-Dichloropropene		10 1
	-2Bromoform	50.	iu i
108-10	-14-Methyl-2-Pentanone	100.	iu i
591-78	-62-Hexanone	100.	10 ;
	4Tetrachloroethene	50.	וט ו
1 79-34	51,1,2,2-Tetrachloroethane	50.	וט ו
108-88	3Toluene	45.	; J
108-90-	7Chlorobenzene	50.	<u>:</u> U :
100-41-	4Ethylbenzene	27.	J :
100-42-	5Styrene 7Xylene (total)	50.	10 :
1330-20-	7Xylene (total)	50.	10 :
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# VOLATILE ORGANICS ANALYSIS DATA SHEET TI ATIVELY IDENTIFIED COMPOUNDS

TI ATIVELY IDENTIFIED COMPOUNDS : V197V2FS

ab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: 0015506 No.:

Matrix: (soil/water) WATER Lab Sample ID: 3435.9

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2646

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/16/91

Column: (pack/cap) PACK Dilution Factor: 10.00

### CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	: : RT	: EST. CONC.	: Q :
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FORM I VOA-TIC

1/87 Rev.

EPA SAMPLE NO.

### VOL. LE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

V197V2FD

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00147

Matrix: (soil/water) WATER Lab Sample ID: 3436.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2649

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/16/91

Column: (pack/cap) PACK Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTR (ug/L or			0	
74-87-3 74-83-9 75-01-4 75-09-2 67-64-1 75-15-0 75-35-4 75-34-3 540-59-0 107-06-2	ChloromethaneBromomethaneVinyl ChlorideChloroethaneMethylene ChloriAcetoneCarbon Disulfide1,1-Dichloroetha1,2-DichloroetheChloroform	de		100. 100. 1200. 100. 50 %, 100. 50. 50. 1400. 50.	: U	CAE-4191
78-93-3   71-55-6   56-23-5   108-05-4   75-27-4   78-87-5   10061-01-5   124-48-1   79-00-5   71-43-2   1061-02-6   75-25-2   108-10-1   591-78-6   127-18-4   19-34-5   108-88-3	2-Butanone1,1,1-TrichloroeCarbon TetrachloVinyl AcetateBromodichloromet1,2-Dichloropropcis-1,3-DichloroTrichloroetheneDibromochloromet1,1,2-Trichloroe	thane ride hane ane propene thane thane ropropene		50. 100. 50. 50. 50. 50. 50. 50. 50. 50. 100. 10	4 C C C C C C C C C C C C C C C C C C C	6/24/91
1330-20-7	Styrene Xylene (total)			50. 50.	. '	

### 1 E VOLATILE ORGANICS ANALYSIS DATA SHEET

T: 'ATIVELY IDENTIFIED COMPOUNDS

:		- 1
;	V197V2FD	;

EPA SAMPLE NO.

Lab Name: PACE Contract:

SDG No.: SAS No.: 00148

Matrix: (soil/water) WATER Lab Sample ID: 3436.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2649

Level: (low/med) LOW Date Received: 5/11/91

% Moisture: not dec.100. Date Analyzed: 5/16/91

Column: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

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CAS NL	IMBER	COMPOUND	NAME	: : RT !=======	: EST. CONC.	; Q ;
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#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/11/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

All postive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be reevaluated.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was  $10^{\,\rm O}$ C. No temperature was recorded for the UniFirst samples. Temperatures outside the  $4^{\,\rm O}$ C  $\pm 2^{\,\rm O}$ C range may adversely affect the volatile compounds.

No positive results were reported in any of the samples in this sample delivery group.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Eight samples were collected and submitted to PACE, Inc. on May 11, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S5 <b>-</b> 9	3367	05/11/91
S6-14	3368	05/11/91
S6-14TB	3370	05/11/91
S1-14FB	3373	05/11/91
V131V2TB	3431	05/11/91
V140V2FS	3432	05/11/91
V140V2FD	3433	05/11/91
V140V2FB	3434	05/11/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/16/91.

#### B. Continuing

Continuing calibration criteria were met on 5/21/91 with the exception of the RF for 1,1-dichloroethane (actual 0.01137; criteria 0.1) and the % difference for 1,1-dichloroethane (actual 99.6; criteria 25). Detection limits for 1,1-dichloroethane were rejected in Sample V131V2TB.

Continuing calibration criteria were met on 5/22/91 with the exception of the % difference for trans-1,2-dichloroethene (actual 28.21; criteria 25). Data were not affected.

#### IV. Blanks

The trip blanks, field blanks, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.



#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V2FS. The percent recovery for 1,1-dichloroethene was slightly below QC criteria in the MS. The relative percent differences for trichloroethene and benzene were above QC criteria. No positive results for those compounds were detected, so no data were qualified.

#### VII. Field Duplicates

Samples V140V2FS and V140V2FD were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

No positive results were reported for any of the samples in this sample delivery group.

#### X. Compound Quantitation and Reported Detection Limits.

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
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Compound	MDL (ug/L)
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

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PACE Project Number: 810511501

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0033670 05/11/91 05/11/91 S5-9
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND is 2 graphic field on the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

Not detected at or above the MDL. ND

UNIFIRST/ENSR	PACE Project Number	-: 8105	11501
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0033689 05/11/91 05/11/91 S6-14
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODE Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	IFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND W JAPAI
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

Method Detection Limit Not detected at or above the MDL.

MDL ND

### UNIFIRST/ENSR

PACE Project Number: 810511501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL_	95 0033700 05/11/91 05/11/91 S6-14 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WD ND ND ND ND ND ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L uq/L	0.5 0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR	PACE Project Number	r: 8105	11501
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MOL	95 0033735 05/11/91 05/11/91 <u>\$1-14 FB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MC Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	DDIFIED ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W Ex Jalar
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5 0.5	ND : ND ! ND ! ND ! ND ! ND !
Ethyl benzene Xylene, total	ug/L	0.5	ND

MDL ND Method Detection Limit Not detected at or above the MDL.

PACE Project Number: 8105113040 4 1

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0034316 05/11/91 05/11/91 <u>V131 V2 TB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W Exp 1/9/41
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

PACE Project Number: 810511504 W.R.GRACE

PACE Sample Number: Date Collected: Date Received: Parameter		<u>Units</u>	MDL	95 0034324 05/11/91 05/11/91 V140 V2 FS
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 Notes of the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second seco	 	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	The property of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of the design of
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	1	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	! ! !	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	! ! !	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total		ug/L ug/L	0.5 0.5	ND   ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Project Number: 810511504 W.R.GRACE

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL_	95 0034332 05/11/91 05/11/91 V140 V2 FD
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W Exergical ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Project Number: 810511504

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034340 05/11/91 05/11/91 <u>V140 V2 FB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MOD Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	OIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND W & AMARIAN ND ND ND ND ND ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND _

MDL

Method Detection Limit Not detected at or above the MDL. ND



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/12/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991 Rev. 9/6/91

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Treatment system samples from both the UniFirst and W.R. Grace treatment systems were included in this sample delivery group. Data quality for this sample delivery group was good. The chain of custody forms for the W.R. Grace site did not show that the samples were relinquished by the sampler.

Excessive quality control samples were submitted with this sample delivery group. Because of this, the following samples were not analyzed by the laboratory: S1-15MS, S1-15MSD, V131V3FS, V131V3FSMSD, V197V3MSD, V197V3MSD, V154V3MS, and V154V3MSD.

Cooler temperatures upon receipt of samples by the laboratory were  $8^{\circ}\text{C}$  for the W.R. Grace samples and  $7^{\circ}\text{C}$  for the UniFirst samples. Temperatures outside the  $4^{\circ}\text{C} + 2^{\circ}\text{C}$  range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Twelve samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 12, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
V131V3FD V131V3TB V154V3FS V154V3FD V197V3FD V197V3FS S1-15	3443 3444 3451 3450 3449 3448 3454	05/12/91 05/12/91 05/12/91 05/12/91 05/12/91 05/12/91
S1-15DUP S1-15TB S4-13	3455 3465 3460	05/12/91 05/12/91 05/12/91



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

All samples except S4-13 were analyzed within the 7-day holding for nonpreserved samples. Sample S4-13 was analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in Sample S4-13.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met on 4/24/91 (Instrument J) with the exception of the RRF for carbon tetrachloride (actual 0.088; criteria 0.1. Detection limits for carbon tetrachloride were rejected in Samples V197V3FS, V197V3FSMSD, V197V3FD, and V154V3FS.

Initial calibration criteria were met on 5/14/91 (Instrument G) with the exception of the RRF for 2-butanone (actual 0.031; criteria 0.1) and the %RSD for 2-butanone (actual 31.6; criteria 30). Detection limits for 2-butanone were rejected in Samples V131V3FD, V131V3TB, and V154V3FD.

Initial calibration criteria were met on 5/17/91 (Instrument G) with the exception of the RRF for 2-butanone (actual 0.030; criteria 0.01) and the %RSD for 2-butanone (actual 39.9; criteria 30). The values listed on the Form VI for the RRF and %RSD of 2-butanone are incorrect. Correct values are provided above. The data validator has corrected the Form VI, and a corrected form is provided with this validation report. Detection limits for 2-butanone were rejected in Samples S1-15, S1-15DUP, S1-15TB, and S4-13.



### B. Continuing

Continuing calibration criteria were met on 5/16/91 with the exception of the RF for carbon tetrachloride (actual 0.085; criteria 0.1) and the % difference for chloromethane (actual 34.7; criteria 25), trans-1,3-dichloropropene (actual 30.9; criteria 25), and 2-hexanone (actual 39.9; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/16/91 with the exception of the RF for 2-butanone (actual 0.031; criteria 0.1) and the % difference for methylene chloride (actual 37.1; criteria 25) and acetone (actual 44.1; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/19/91 with the exception of the RF for 2-butanone (actual 0.019; criteria 0.1) and the % difference for acetone (actual 53.2; criteria 25) and 2-butanone (actual 43.0; criteria 25). Detection limits for acetone were qualified as estimated in Samples S1-15, S1-15DUP, and S1-15TB.

Continuing calibration criteria were met on 5/20/91 with the exception of the RF for 2-butanone (actual 0.024; criteria 0.1) and the % difference for 2-butanone (actual 28.3; criteria 25) and bromoform (actual 29.1; criteria 25). Data were not affected.

### IV. Blanks

Methylene chloride was reported in Trip Blank S1-15TB. Acetone was reported in Method Blanks VBLK01 and VBLk02. The result for methylene chloride in Sample S1-15TB was qualified as less than the reported value. The result for acetone in Sample V197V3FSMS was qualified as less than the reported value.

### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V197V3FS. The %RPD for benzene was slightly above QC criteria (actual 13; criteria 11). Since benzene was not detected in field samples, data were not affected. Other data were within acceptance criteria.



Concentrations of the spiking compounds were not reported on the Form Is for the MS or the MSD.

### VII. Field Duplicates

Three sets of duplicate samples were analyzed. Compounds and concentrations (in ug/L) reported were as follows:

Compound	<u>V154V3FS</u>	<u>V154V3FD</u>
Acetone	74	
Trichloroethene	410	370
Tetrachloroethene	11	

Results for acetone and tetrachloroethene in the field sample were rejected. Agreement between trichloroethene results in the two samples was within QC criteria.

Compound	<u>V197V3FS</u>	<u>V197V3FD</u>
Vinyl Chloride	1900	1600
Acetone		190
1,2-Dichloroethenes	1400	1400
Trichloroethene	63	62
Toluene	29	28
Ethylbenzene	34	33

The result for acetone in the field duplicate was rejected. Agreement between other results in these two samples were within acceptance criteria.

Compound	<u> 51-15</u>	<u>S1-15DUP</u>
Tetrachloroethene	2600	2400

Agreement between tetrachloroethene results in the two samples was within acceptance criteria.

### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

### IX. TCL Compound Identification

TCL compound identifications were acceptable.



### X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

### XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

### XII. System Performance

System performance requires attention. Manual integrations should be addressed. One sample exceeded the required holding time. Response factor criteria should be monitored.

### XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was good.

The aromatic compounds in S4-13 were qualified as estimated.

Detection limits for 2-Butanone and carbon tetrachloride were rejected in some samples.

Acetone and tetrachloroethene were rejected in V154V3FS.

Acetone was rejected in V197V3FS.

Methylene chloride and acetone results were qualified as less than the reported values in S1-15TB and V197V3FMS, respectively.

### VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. V131V3FD

Lab Name: PACE

Contract:

Matrix: (Soil/water) WATER

Lab Sample ID: 3443.0

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: G2933

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec. 100.

Date Analyzed: 5/16/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND	CONCENT					Q
} 74-87-3Chloromethane			<b>!</b>	100.	: ប	;
74-83-9Bromomethane			, !	100.	10	,
75-01-4Vinyl Chloride_			!	930.	, 0	,
75-00-3Chloroethane			!	100.	:0	,
75-09-2Methylene Chlori	 de		!	50.	יטו	i
67-64-1Acetone	JE		!	100.	: U	;
75-15-0Carbon Disulfide			!	50.	: u	•
75-35-41,1-Dichloroethe				50.	: U	i
75-34-31,1-Dichloroetha				50.	ίŪ	
540-59-01.2-Dichloroethe			}	1200.	1	ì
67-66-3Chloroform				50.	ĺυ	
107-06-21.2-Dichloroetham				50.	ΙŪ	;
1 78-93-32-Butanone				100	##	R:
: 71-55-61,1,1-Trichloroe	hane	:		50.	ıυ	•
1 56-23-5Carbon Tetrachlon	ıde	;		50.	: ប	;
108-05-4Vinyl Acetate		;		100.	; U	;
1 75-27-4Bromodichlorometh	ane	;		50.	:U	1
1 78-87-51.2-Dichloropropa	ine	;		50.	:U	;
110061-01-5cis-1,3-Dichlorop	ropene _	!		50.	١U	;
1 79-01-6Trichlorgethene		1		330.	:	;
1 124-48-1Dibromochlorometh	ane	;		5o.	:U	1
1 79-00-51,1,2-Trichloroet	hane	!		50.	:U	;
1 71-43-2Benzene		;		50.	ŀυ	;
10061-02-6Trans-1,3-Dichlor				50.	ŀυ	;
1 75-25-2Bromoform		!		50.	١U	:
108-10-14-Methyl-2-Pentar	one	;		100.	١U	;
591-78-62-Hexanone		;		100.	:U	;
: 127-18-4Tetrachloroethene				50.	; U	;
79-34-51.1,2,2-Tetrachlo	roethane	{		50.	: U	1
108-88-3Toluene		!		50.	:υ	ł
108-90-7Chlorobenzene		;		50.	!U	;
100-41-4Ethylbenzene				50.	; U	;
100-42-5Styrene		;		50.	١U	;
1330-20-7Xylene(total)		¦		50.	:ប :'	; ;

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V131V3FD
Contract:

Lab Name: PACE

Matrix: (Soil/water) WATER Lab Sample ID: 3443.0

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: G2933

Level: (low/med) LOW Date Received: 5/12/91

% Moisture: not dec. 100.
Date Analyzed: 5/16/91

Column: (pack/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS:

' Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	. α
1.		, !	; = = = = = = = = = = = = = = = = = = =	;=====
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FORM I VOA-TIC

1/87 Rev.

### VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. ! VI31V3TB

Lab Name: PACE

Contract:

Matrix: (soil/water) WATER

Lab Sample ID: 3444.8

'Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 62934

Level: (low/med) LOW

Date Received: 5/12/91

% Moisture: not dec. 100.

Date Analyzed: 5/16/91

-Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND			TION U	- · <del>-</del> -	0	
1 74-87-3	Chloromethane			!	10.	: :ប	;
74-07-0	Bromomethane			'	10.	ີ່ມ ·	
75-01-4	Vinyl Chloride			;	10.	10	
75-00-3	Chloroethane			'	10.	10	,
75-09-7	Methylene Chlo	ride		'	5.	lu	į
	Acetone				10.	: U	ì
! 75-15-0	Carbon Disulfi			:	5.	ΙÜ	í
75-35-4	1.1-Dichloroet	hene		:	5.	10	:
75-34-3	1.1-Dichloroet	hane			5.	Ü	;
540-59-0	1.2-Dichloroet	hene (tota	aI)		5.	10	1
	Chloroform				5.	; U	1
107-06-2	1,2-Dichloroet	hane		;	້ອ.	וֹט	1
1 78-93-3	2-Butanone			;	جهد	HUR	- ;
1 71-55-6	1,1,1-Trichlor	ethane		;	5.	; ບໍ	}
3 56-23-5	Carbon Tetrach:	loride		;	5.	:U	;
108-05-4	Vinyl Acetate			;	10.	:ប	;
1 75-27-4	Bromodichlorome	ethane			5.	١u	1
1 78-87-5	1,2-Dichloropro	opane		;	5.	មេ	;
110061-01-5	cis-1.3-Dichlor	ropropene			5.	!U	-
1 79-01-6	Trichĺoroethene				5.	: U	;
1 124-48-1	Dibromochlorome	ethane		;	5.	(U	1
1 79-00-5	1,1.2-Trichlore	ethane		;	5.	:U	:
	Benzene			!	5.	i U	;
110061-02-6	Trans-1.3-Dichl	loroproper	ie _	!	· 5.	ΙU	ļ
		<del></del>		_ ;	5.	ŀυ	;
108-10-1	4-Methyl-2-Pent	anone		;	10.	; U	;
591-78-6	2-Hexanone			!	10.	; U	;
	Tetrachloroethe				5.	ΙU	;
1 79-34-5	1,1,2,2-Tetrach	loroethan	e _	_ !	5.	: U	;
108-88-3	Toluene				5.	ιυ	;
108-90-7	Chlorobenzene _			;	5.	١U	;
100-41-4	Ethylbenzene			<u>-                                    </u>	5.	١U	;
100-42-5	Styrene			_ ;	5.	:U	1
1330-20-7	Xylene(total)			-!	5.	U	;
				_		·	_ ;

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V131V3TB :

Lab Name: PACE Contract:

Number TICs found: 0

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

latrix: (soil/water) WATER Lab Sample ID: 3444.8

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: G2934

evel: (low/med) LOW Date Received: 5/12/91

" Moisture: not dec. 100. Date Analyzed: 5/16/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

. CAS NUMBER	COMPOUND NAME	; ; RT !=======	: EST. CONC.	
1				
4				
6				
7				
9				;
11;				;
14				
16				
17				
19				
21				;
1 00		,		:
24				:
25.				
1 30				;
29.				:
				;

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA BAMPLE NO.

Lab Name: PACE

Contracts

Lab Code: PACE Case No.: EPC BAS No.:

808 No. : 11176

Matrix: (doil/water) WATER

Lab Sample ID: 3451.0

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 62935

Level: (low/med) LOW

Date Received: 5/12/91

I Moisture: not dec. 100.

Date Analyzed: 5/16/91

¿ Column: (pack/cap) PACK

Dilution Factor: 5.00

		CONCENTRATION	UNITE:		;
CAB NO.	COMPOUND	(ug/L or ug/k	(g) U@/L	ū	
74-83-9 75-01-4 75-00-3 75-09-2 75-64-1 75-35-4 75-34-3 75-66-3 107-06-2 78-93-3 108-05-4 75-27-4 78-87-5 110061-01-5	COMPOUND ChloromethaneBromomethaneVinyl ChloridChloromethaneMethylene ChlAcetoneCarbon Disulf1,i-Dichlorom1,2-Dichlorom1,2-Dichlorom1,2-Dichlorom1,1-Trichlorom1,1-TrichloromCarbon TetraciVinyl AcetateBromodichlorom1,3-Dichlorom1,3-Dichlorom	oride  oride  ids thens thans thans thans hioride  methans propresses	50. 50. 50. 50. 50. 25. 25. 25. 25. 25. 25. 25. 25. 25. 25	ם בבבבבבבבבבבבבבבבבבבבבבבבבבבבבבבבבבבב	m/ 2/4/9/ 2/6/91
79-01-6 124-48-1 124-48-1 179-00-5 171-43-2 10061-02-6 108-10-1 1591-78-6 127-18-4 108-88-3 108-90-7 100-41-4 100-42-5	cis-1,3-Dichle Trichloroether Dibromochlorom 1,1,2-Trichlom Benzene Trans-1,3-Dich	ne methane methane methane methane methane methane methane methane methane mene mene mene mene mene mene mene m	370. 25. 25. 25. 25. 25. 50. 50. 25. 25. 25.	ניטנינינייייייייייייייייייייייייייייייי	
1330-20-7	Xylene(total)		25.		

### VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS V154V3FD Contract:

SDG No.:

Lab Name: PACE

Lab Sample ID: 3451.0

' datrix: (soil/water) WATER

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: G2935

.evel: (low/med) LOW Date Received: 5/12/91

% Moisture: not dec. 100. Date Analyzed: 5/16/91

Column: (pack/cap) PACK Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ua/t or ug/kg) UG/t

		;	!	·;
CAS NUMBER	COMPOUND NAME	l RT	EST. CONC.	1 Q 1
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FORM I VOA-TIC

### VOLA...LE ORGANICS ANALYSIS DATA SHEET

V154V3FS

ab Name: PACE Contract:

b Code: PACE Case No.: EPC SAS No.: SDG No.:

atrix: (soil/water) WATER Lab Sample ID: 3450.2

mple wt/vol: 5. (g/mL) ML Lab File ID: J2653

evel: (low/med) LOW Date Received: 5/12/91

Moisture: not dec.100. Date Analyzed: 5/16/91

plumn: (pack/cap) PACK Dilution Factor: 5.00

CONCENTRATION UNITS:
CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

74-87-3-----Chloromethane 50. 74-83-9-----Bromomethane 50. U 75-01-4-----Vinyl Chloride 50. U 75-00-3----Chloroethane U 50. 75-09-2----Methylene Chloride\_\_\_\_ 25. U 67-64-1-----Acetone 74. 75-15-0-----Carbon Disulfide 25. U 75-35-4----1,1-Dichloroethene\_\_\_\_ 25. U 75-34-3----1,1-Dichloroethane U 25. 540-59-0----1,2-Dichloroethene (total)\_ 340. 67-66-3-----Chloroform U 25. 107-06-2----1,2-Dichloroethane\_ 25. U 78-93-3----2-Butanone 50. U 25. 71-55-6----1,1,1-Trichloroethane U 40 R 56-23-5-----Carbon Tetrachloride 25. 108-05-4-----Vinyl Acetate 50. U 75-27-4----Bromodichloromethane U 25. 78-87-5----1,2-Dichloropropane 25. U 10061-01-5----cis-1,3-Dichloropropene 25. U 79-01-6----Trichloroethene 410. 124-48-1-----Dibromochloromethane 25. U 79-00-5----1,1,2-Trichloroethane U 25. 71-43-2----Benzene 10061-02-6----Trans-1,3-Dichloropropene 25. U Ħ 25. 75-25-2----Bromoform U 25. 108-10-1-----4-Methyl-2-Pentanone 50. U 591-78-6----2-Hexanone\_ 50. U 127-18-4----Tetrachloroethene بيد 79-34-5----1,1,2,2-Tetrachloroethane \_\_\_ 25. U 108-88-3----Toluene U 25. 108-90-7-----Chlorobenzene 25. U 100-41-4----Ethylbenzene\_ 25. U 100-42-5----Styrene 25. U 1330-20-7-----Xylene (total) 25. U

### 1E VOLU TLE ORGANICS ANALYSIS DATA SHEET TL.. PATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V154V3FS

Name: PACE

Contract:

ib Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

20073

trix: (soil/water) WATER

Lab Sample ID: 3450.2

mple wt/vol:

5. (g/mL) ML

Lab File ID: J2653

./el: (low/med) LOW

Date Received: 5/12/91

Moisture: not dec.100.

Date Analyzed: 5/16/91

humn: (pack/cap) PACK

Dilution Factor:

5.00

. mber TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
2		_		
		-		
:				
		-		
:				
:				-
:				
:				

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### VOI ATILE ORGANICS ANALYSIS DATA SHEET

.ab Name: PACE Contract:

fatrix: (Soil/water) WATER Lab Sample ID: 3449.9

Gample wt/vol: 5.0 (g/mL) ML Lab File ID: J2652

Level: (low/med) LOW Date Received: 5/12/91

Moisture: not dec. 100. Date Analyzed: 5/16/91

Column: (pac)/cap) PACK Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRA (ug/L or			۵	_
1 74 67 3			;	400	1	1
1 74-8/-3	Chloromethane		}	100.	i U	
1 74-83-9	Bromomethane		!	100.	;U	<b>i</b> ,
75-01-4	Vinyl Chloride		<u> </u>	1600.	·	i
; /5-00-3	Chloroethane		:	100.	. –	i
75-09-2	Methylene Chlo	rıde	<u>;</u>	50.	!U	i <del> </del>
1 5/-64-1	Acetone		<u>i</u>	1 <del>90.</del>	BR	C127191
; /3-13-0	Carbon Disulfic		:	50.	! U	i
75-35-4 1 75-34-3	1,1-Dichloroet	iene	;	50.	١U	•
/5-34-3	1,1-Dichloroet 1,2-Dichloroet	iane	;	50.	! U	1
1 540-59-0	Chlorofour	iene (total)	' <b></b> ;	1400.	i 111	i
1 6/-66-3	Chloroform_		;	50.	: U	· •
107-06-2	1,2-DichloroetM			50.	10	1
78-93-3				100. 50.	¦U	1
	1,1,1-Trichlore				WR	į
: 36-23-3	Carbon Tetrach	oride	:	<del>50.</del>	-	i
1 75 77 4	Vinyl Acetate		¦	100.	ł U	j.
1 70 07-5	Bromodichlorome	thane	¦	50.	! U	•
110061 01-5	1,2-Dichloropro	pane	:	50.	ŀU	i
1 70 01 5	cis-1,3-Dichlor	opropene	;	50.	: U	i
1 124 10 1	Trichloroethens		:	62. 50	i	i
1 124-48-1	Dibromochlorome	tnane	- <b>-</b> :	50.	¦U	i
1 79-00-3	1,1,2-Trichlord Benzene	ethane		50.	: U	i
			<u> </u>	50.	! U	i
110061-02-6	Trans-1,3-Dichl	oropropene .	- <b>-</b>	50.	: U	
: /5-25-2	Bromoform		<u>!</u>	50.	!U	;
108-10-1	4-Methyl-2-Pent	anone	!	100.	l U	;
591-/8-6	2-Hexanone		<u>:</u>	100.	:U	:
	Tetrachloroethe			50.	: U	
79-34-5	<u>1</u> ,1,2,2-Tetrach	loroethane .	<u>:</u>	50.	:U	!
108-88-3	Toluene		- <b>-</b> !	28.	; J	;
108-90-7	Chlorobenzene _		<u>:</u>	50.	١U	t ;
100-41-4	Ethylbenzene		!	33.	¦ J	i i
100-42-5	Styrene		<u>:</u>	50.	; U	! ;
1330-20-7	Xylene (total)_		!	50.	:U	
			- 1		: :	

## VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS : V197V3FD :

Lab Name: PALE	Contract:	i

iatrix: (soil/water) WATER Lab Sample ID: 3449.9

Sample wt/vol: 5.0 (q/mL) ML Lab File ID: J2652

evel: (low/med) LOW Date Received: 5/12/91

7 Moisture: not dec. 100. Date Analyzed: 5/16/91

Lolumn: (pac)/cap/ PACk Dilution Factor: 10.00

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	; ¦ RT !=======	: EST. CONC.	: 0 :
1	1		!	, ====,
1	i			;;
		''		!:
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11	· •			:
12.				:
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14.	,			:
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16.		;		;;
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4.5				:;
		,		:
22.				:
23		:	<del></del> ;	:
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25.		-		
26.		,		;
27		;		
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7.0				:
20.				
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## 1A VO'ATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
----V197V3F5

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3448.0

'Bample wt/vol: 5.0 (g/mL) ML Lab File ID: J2643

Level: (low/med) LOW Date Received: 5/12/91

( Moisture: not dec. 100. Date Analyzed: 5/16/91

.Column: (pack/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS:

	CAS NO.	COMPOUND	(ug/L d	or	ug/Kg)	UG/L		Q
	f							;
	: 74-87-3	Chloromethane			:	100.	ŀυ	1
	: 74-83-9	Bromomethane			!	100.	: U	1
	: 75-01-4	Vinyl Chloride			1	1900.	!	;
	: 75-00-3	Chloroethane			;	100.	١U	:
1	: 75-09-2	Methylene Chlo	ride		:	50.	١U	;
1	67-64-1	Acetone			;	100.	١U	<b>!</b>
1	75-15-0	Carbon Disulfic	de			50.	١U	1
;	75-35-4	1.1-Dichloroet	tene		1	50.	١U	;
;	75-34-3	1.1-Dichloroet	rane		;	50.	١U	;
;	540-59-0	1,2-DichloroetH	mene (tota	1)	;	1400.	:	;
1	67 <i>-</i> 66 <i>-</i> 3	Chloroform				50.	ŧυ	:
;	107-06-2	1,2-Dichloroeth	iane			SÕ.	ΙU	!
;	78-93-3	2-Butanone			;	100.	١U	;
1	71 -55 -6	1.1.1-Trichlord	ethane		- 1	50.	١U	;
¦	56-23-5	Carbon Tetrach]	oride			50.	الملأ	<u>~</u> '
;	108-05-4	Vinyl Acetate				100.	¦ IJ	1
1	75-27-4	Bromodichlorome	thane			50.	10	1
;	78 -87 -5	1.2-Dichloropro	pane		<b>:</b>	<b>5</b> 0	- !U	;
ŀ	10061-01-5	cis-1.3-Dichlor	opropene		_ :	50.	: U	;
;	79-01-6	Trichloroethene			_;	63.	:	;
;	124-48-1	Dibromochlorome	thane		_	50.	١U	;
ŀ	79-00-5	1,1,2-Trichlord	ethane		_:	50.	١U	1
:	71-43-2	Benzene			_!	50.	: U	:
ŀ	10061-02-6	Trans-1.3-Dichl	oropropene	e _	_1	50.	١U	;
ŀ	75-25-2	Bromoform			_	50.	١U	:
;	108-10-1	4-Methyl-2-Pent	anone		_ ;	100.	١U	;
;	591 <i>-</i> 78 <i>-</i> 6	2-Hexanone			_ :	100.	ŧυ	;
•	127-18-4	Tetrachloroethe	ne		_	50.	١U	:
;	79-34-5	1,1,2,2-Tetrach	loroethane	⊋	_	50.	١U	1
;	108-88-3	Toluene				29.	; J	;

108-90-7-----Chlorobenzene

100-41-4-----Ethylbenzene\_\_\_\_\_

100-42-5-----Styrene \_\_\_\_\_

| 1330-20-7-----Xylene (total)\_\_\_\_\_

50.

34.

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: U

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# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V197V3FS
Lab Name: PACE Contract: :

Ab Code: PACE Case No.: EPC SAS No.: SDG No.:

'latrix: (soil/water) WATER Lab Sample ID: 3448.0

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2643

evel: (low/med) LOW Date Received: 5/12/91

% Moisture: not dec. 100. Date Analyzed: 5/16/91

Column: (pack/cap) PACK Dilution Factor: 10.00

# CONCENTRATION UNITS: Number TICs found: 0 (ug/L or ug/kg) UG/L

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: CAS NUMBER	COMPOUND NAME	: RT	EST. CONC.	: Q :
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TILE ORGANICS ANALYSIS DATA SHEET

: 6

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3454.5

Sample wt/vol: 5. (g/mL: ML Lab File ID: 62957

Level: (low/med) LOW Date Received: 5/12/91

Date Analyzed: 5.19 01 : " Moisture: not dec.100.

Dilution Factor: 20.00 fColumn: 'pack/cap' PACk

	CONCENTRA	ATION UNITS:	
COMPOUND	(ug/L or	ug/kg) UG/L	C

CAS NO.	COMPOUND	(na/F o		1/k.g)		a	
	ه الله الله الله الله الله الله الله ال			!			;
1 74-87-3	Chloromethane				200.	l U	;
1 74-83-9	Bromomethane			. !	200.	; U	;
1 75-01-4	Vinyl Chloride_			. }	200.	١U	;
1 75-00-3	Chloroethane			. !	200.	: U	;
1 75-09-2	Methylene Chlori	.de	·		100.	; U	
67-64-1	Acetone			;	200.	LU:	;
	Carbon Disulfide			;	100.	ານ	;
1 75-35-4	1.1-Dichloroethe	ne		;	100.	: U	;
1 75-34-3	1.1-Dichloroetha	ne		1	100.	: U	;
	1,2-Dichloroethe				100.	÷υ	1
67-66-3	Chloroform			;	100.	; U	!
1 107-06-2	1.2-Dichloroetha	ne		;	100.	וט ג	;
: 78-93-3	2-Butanone			;	<del>300.</del>	#1	_
1 71-55-6	i,1,1-Trichloroe	thane		;	100.	:U	;
: 56-23-5	Carbon Tetrachlo	ride		1	100.	:U	;
108-05-4	Vinyl Acetate			;	200.	١U	;
1 75-27-4	Bromodichloromet	hane		?	100.	١U	:
1 78-87-5	1,2-Dichloroprop	ane		i	100.	:U	;
110061-01-5	cis-1.3-Dichloro	propene		1	100.	:U	(
79-01-6	Trichloroethene				100.	; U	;
124-48-1	Dibromochloromet	hane		;	100.	: U	;
79-00-5	1.1.2-Trichloroe	thane		;	100.	: U	;
1 71-43-2	Benzene			!	100.	ΙU	1
110061-02-6	Trans-1.3-Dichlo	ropropen	6	;	100.	1.0	1
1 75 25 2	Bromoform			:	100.	: U	
1 108-10-1	4-Methyl-2-Penta	none		1	200.	; U	:
: 591-78-6	2-Hexanone				200.	: U	;
1 127-18-4	Tetrachloroethen	2			2600.	}	;
79-34-5	1,1,2,2-Tetrachl	proethane	e '	!	100.	:U	;
108-88-3	Toluene			i	100.	: ប	;
: 108-90-7	Chlorobenzene				100.	:U	1
100-41-4	Ethylbenzene				100.	: U	:
100-42-5	Styrene				100.	: ນ	;
1030-20-7	Xylene(total)				100.	:U	;
	/ ma made o		;			:	_ ;

# VOLATILE ORGANICS ANALYSIS DATA SHEET INTATIVELY IDENTIFIED COMPOUNDS

.ab Name: PACE Contract:

S1-15

LECT AMOUNTAL HAR

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00160

1atrik: (Soil/water) WATER Lab Sample ID: 3454.5

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2957

Moisture: not dec.100. Date Analyzed: 5/19/91

Dolumn: (pack/cap) PACk Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

. CAS NUMBER	COMPOUND NAME	RT	: : EST. CONC.	
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6 7.				!
7. 3.				·
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### TA TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

.Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00165

'Matrik: (soil/water) WATER Lab Sample ID: 3455.3

Sample wt/vol: 5. (g.mL) ML Lab File ID: G2960

Level: (low/med) LOW Date Received: 5/12/91

( Moisture: not dec.100. Date Analyzed: 5.19/91

\*Tolumn: (pack/cap) PACk Dilution Factor: 20.00

CAS NO.	COMPOUND	(ug/L or i	ام دة ۱/ف،	5/L	Ω
1			;		
74-87-3	Chloromethane		- <b>-</b>	200.	IU.
1 74-83-9	Bromomethane			200.	: U
75-01-4	Vinyl Chloride			200.	; U
1 75-00-3	Chloroethane			200.	: U
1 75-09-2	Methylene Chlo	.rqe	;	100.	:υ,
1 67-64-1	Acetone		;	200.	Lu:
; 75-15-0	Carbon Disulfic	de	;	100.	! U
75-35-4	1.1-Dichloroet	ene	_;	100.	: U
75-34-3	1.1-Dichloroett	ane	_;	100.	:υ
540-59-0	1.2-Dichloroet	rene (total)_	_ ;	100.	: U
67-66-3	Chloroform		_ !	100.	: U
107-06-2	1.1-Dichloroeth	iane	;	100.	100
78-93-3	2-Butanone		_ :	سيهيئند	4-1-
71-55-6	1.1.1-Trichlore	ethane	;	100.	:υ
56-23-5	Carbon Tetrachl	oride	_;	100.	: U
108-05-4	Vinyl Acetate _		_!	200.	: U
75 - 27 - 4	Bromodichlorome	thane	_	100.	: U
78 -87 -5	1.2-Dichloropro	pane	_ ;	100.	: U
10061-01-5	cis-1.3-Dichlor	opropene	_ !	100.	:U
79-01-6	Trichloroethene		_	100.	: U
124-48-1	Dibromochlorome	thane	_ ;	100.	; U
79-00-5	1,1,2-Trichlord	ethane	_ ;	100.	: U
71-43-2				100.	١U
10061-01-6	Trans-1.3-Dich1	oropropene	:	100.	: U
75-25-2	Bromoform		:	100.	: U
108-10-1	4-Methyl-2-Pent	anone		200.	: U
591-78-6	2-Hexanone		_ 1	200.	١U
127-18-4	Tetrachloroethe	ne		400.	<b>(</b>
79-34-5	1.1.2.2-Tetrach	loroethane	-	100.	ιU
108-88-3	Toluene		1	100.	:U
108-90-7	Chlorobenzene		- ;	100.	١Ü
100-41-4	Ethylbenzene		`;	100.	ΙU
100-42-5	Styrene		•	100.	; U
1330-20-7	·Xvlene(total)		· •	100.	i U

# VOLATILE ORGANICS ANALYSIS DATA EHEET NTATIVELY IDENTIFIED COMPOUNDS

31-15DUP

SEA SHITTS NU.

Lab Name: PACE Contract:

00166

datri.: (soil/water) WATER Lab Sample ID: 3455.3

|Sample wt/vol: 5. (g/mL) ML Lab File ID: 62960

Level: (low/med) LOW Date Received: 5/12/91

-. Moisture: not dec.100. Date Analyzed: 5/19/91

Column: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/kg) UG/L

!				<b></b>
CAS NUMBER	COMPOUND NAME	: : RT	EST. CONC.	:
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EPA SAMPLE NO.

31-15 TB

Lab Name: PACE Contract:

00171

Matrix: (soil/water) WATER Lab Sample ID: 3465.0

Sample ut/vol: 5. (d/mL/ ML Lab File ID: G2952)

Level: (low/med) LOW Date Received: 5/12/9t

.: Moisture: not dec.100. Date Analyzed: 5/19.91

\*Tolumn: (pack/cap) PACk Dilution Factor: (.00

### CONCENTRATION UNITS:

CAS NO.	COMPOUND	(uq/L or ug/kg)	UG/L	(
7+ 07 0		<u> </u>		
74-87-3	Chloromethane		10.	
74-83-3	Bromomethane		10.	
75-01-4	Vinyl Chloride		10.	_
75~00~3~~	Chloroethane		10.	
/5/09-1	Methylene Chlori	oe	<b>.</b>	
6/~64~1~~·	Acetone		10.	107
/5-15-0	Carbon Disulfide		5.	: U
/5-35-4	1.1-Dichloroethe	ne	5.	: U
75-34-3	1,1-Dichloroetha	ne	5.	U
240-29-0	1.2-Dichloroethe	ne (total)[	5.	; U
67 <i>-</i> 66-3	Chloroform		5.	į U
107-06-2	1.2-Dichloroetha	ne:	5,	14 0
78-93-3	2-Butanone		20.	HER
71-55-6	1.1.1-Trichloroe	thane !	5.	: U
56~23-5~	Carbon Tetrachlo	ride	5.	: U
108-05-4	Vinyl Acetate		10.	; U
フぢ~ごフ~4~~~	Bromodichlorometh	hane	5.	: U
78 -87 -5	1,2-Dichloropropa	ane	5.	:υ
10061-01-5	cis-1,3-Dichlorop	propene:	5.	: U
79-01-6	Trichloroethene		5.	!U
124-48-1	Dibromochlorometh	nane	5.	: U
79-00-5	1.1.2-Trichloroet	thane	5.	: IJ
71-43-2	Benzene	;	5.	10
0061-02-6	Benzene Trans-1,3-Dichlor	ropropene :	5.	: U
75-25-2	Bromoform	\$ 1	5.	: U
108-10-1	4-Methyl-1-Pentar	none :	10.	١Ū
591-78-6	2-Hexanone		10.	ŧ Ü
127-18-4	Tetrachloroethene		5.	: U
79-34-5	1,1,2,2-Tetrachlo	roethane !	5.	: Ш
108-88-3			5.	l U
	Chlorobenzene		5.	: U
100-41-4	Ethylbenzene		5.	: U
	Styrene		5. 5.	:บ
- 100-42-5		1		. ( )

### VOLATILE ORGANICE ANALYSIS DATA SHEET INTATIVELY IDENTIFIED COMPOUNDS

31-15 TB

\_ab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00172

Matrix: (soil/water) WATER Lab Sample ID: 3465.0

Sample ut/vol: 5. (q/mL/ ML Lab File ID: 62962

-level: (low/med) LOW Date Received: 5/12/91

. Moisture: not dec.100. Date Analyzed: 5/19/91

Column: (pack/cap) PACK Dilution Factor: 1.30

CONCENTRATION UNITS:

Number TICs found: 0 rug/L or ug/kg) UG/L

CAS NUMBER	; :	; ; RT	: : EST. CONC.	: a
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54-13

b Name: PACE Contract:

Pb Code: PACE Case No.: EPC SAS No.: SDG No.: 00177

atrix: (soil/water) WATER Lab Sample ID: 3460.0

imple wt/vol: 5. (g/mL) ML Lab File ID: G2984

evel: (low/med) LOW Date Received: 5/12/91

. Moisture: not dec.100. Date Analyzed: 5/20/91

: lumn: (pack/cap) PACk Dilution Factor: 10.00

CONCENT	rati	אט אס	ITS:
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	CAS	NO.	COMPOUND (ug/L or ug	/kg) UG/L		Cl
1				1		;
1	74	-87	-3Chloromethane	100.	: U	:
;	フチ	-93-	-9Bromomethane	100.	: IJ	:
;	75	-01-	-4Vinyl Chloride	100.	١U	-
;	75	-QQ -	-3Chloroethane	100.	ΙU	-
;	75	-09-	2Methylene Chloride	50.	: U	1
;			·1Acetone	100.	; U	;
;	75	-15-	OCarbon Disulfide	50.	: U	:
;	75	-35 -	41,1-Dichloroethene	50.	: U	:
¦	<i>7</i> 5	-34 -	G1.1-Dichloroethane	50.	10	;
;	540	-59-	O1.2-Dichloroethene (total)	50.	: U	:
;	€7·	-56-	3Chloroform	50.	10	;
-	107	~()6 ~	21.2-Dichloroethane	50.	١U	0 1
;	78.	-93-	32-Butanone	ببيد	2	F- :
;	/1-	- ンン -	b1.1.1~Trichloroethane	50.	; U	}
;	56-	-23-	5Carbon Tetrachloride	50.	ιU	
;	108-	-05-	4Vinyl Acetate	100.	; U	}
;	75 -	・ニフー	4Bromodichloromethane	50.	: U	;
;	78 -	-87 -	5:	50.	١U	ļ
1	10061-	01 -	5cis-1.3-Dichloropropene	50.	ŀυ	1
ł	79-	01-6	5Trichloroethene	50.	: U	i
;	124-	48-:	1Dibromochloromethane :	50.	: U	;
1	79-	QQ -5	51.1.2-Trichloroethane	50.	: U	;
1	71-	43-1	lBenzene	50.	:01	;
1 1	10061 -	02-6	Trans-1.3-Dichloropropene :	50.	: U	;
1	75-	25-2	2Bromoform	50.	:U	1
!	108-	10-1	4-Methyl-2-Pentanone	190.	; U	;
1	591 -	78-E	2-Hexanone	100.	:U	;
;	127-	18-4	Tetrachloroethene:	1500.	;	}
ļ	アター:	34-5	1.1,2.2-Tetrachloroethane	50.	¦ U	!
;	108-	9 <b>8</b> - 3	Toluene	50.	:UJ	;
i	108-3	30 <b>-</b> 7	Chlorobenzene		:UJ	;
:	100	41 <b>-</b> 4	Ethylbenzene	50.	۲03	:
1	100	12-5	Styrene	50.	:UJ	f 1
	1330-1	20-7	Xylene(total)	50.	·υΣ	;
			· · · · · · · · · · · · · · · · · · ·		' <b></b>	i

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	EF4	EAMPLE	MO.
,	34-	-13	

Contract: Lab Name: PACE

SDG No.: 00178 

Matrix: (soil/water) WATER Lab Sample ID: 3460.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2984

level: (low/med) LOW Date Received: 5/12/91

" Moisture: not dec.100. Date Analyzed: 5/20/91

Column: (pach/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS:

(ug/L or ug/kg/ UG/L Number TICs found: 0

	NUMBER	COMPOUND NAME	: RT	EST. CONC.	. α :
	NOMBER	' CONFOOND NAME	·!======		1
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FORM I VOA-TIC

# VOL: LE ORGANICS INITIAL CALIBRATION DATA

.ab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00183

nstrument ID: G Calibration Date(s): 5/17/91 5/17/91

Matrix: (soil/water) WATER Level: (low/med): LOW Column: (pack/cap) PACK

in  $\overline{RRF}$  for SPCC(#) = .300 (0.250 for Bromoform) Max %RSD for CCC(\*) = 30.0%

LAB FILE ID: RRF020= G2939 RRF050= G2942 RRF100= G2941 RRF150= G2940 RRF200= G2938								
COMPOUND	RRF020	RRF050	RRF100	RRF150	RRF200	RRF	% RSD	
Chloromethane	.626	.657	.643	.599	.686	.642	5.0#	
Bromomethane	1.740		1.761	1.573	1.302	1.620	11.9	
'inyl Chloride	* 1.070	1.071	1.144	1.114	1.228	1.125	5.8*	
-Uhloroethane	.680	.684	.710	.687	.813	.715	7.8	
Methylene Chloride	1.550	1.846	1.532	1.488	1.626	1.608	8.8	
cetone	.319	.332	.261	.247	.321	.296	13.1	
arbon Disulfide	1.184	1.301	1.334	1.555	1.912	1.457	19.7	
1,1-Dichloroethene	* 1.552	1.583	1.641	1.646		1.665	8.3*	
1,1-Dichloroethane	# 2.790	2.818	2.782	2.769	3.144	2.860	5.6#	
,2-Dichloroethene (total)	1.309	1.325	1.360	1.351	1.619	1.393		2
chloroform	3.432	3.666	3.630	3.515	4.007	3.650	9.21 x 6.0* 0	j
1,2-Dichloroethane	1.821	1.995	1.952	1.826	1.981	1-915	1 1	
-Butanone	.016	.018	.037	.035	.042	(.033)	31.1 300	(
,1,1-Trichloroethane	.704	.748	.792	.773	.901	.784	9.4 3	
Carbon Tetrachloride	.664	.727	.767	.760	.907	.765	11.71.	
Vinyl Acetate	.311	.355	.332	.332	.427	.351	12.8	1
comodichloromethane	.735	.832	.881	.849	1.041	.868	12.8 /1/3/7	١,
.,2-Dichloropropane	.436	.461	.471	.462	.540	.474	8.3 <sup>*' </sup> '	
cis-1,3-Dichloropropene	.628	.668	. 684	.693	.845	.704	11.8	
R-ichloroethene	.678	.705	.709	.651	.819	.712	9.0	
bromochloromethane	.850	1.008	1.023	.978	1.163	1.005	11.1	
I, 1, 2-Trichloroethane	.477	.514	.495	.463	.543	.498	6.3	
Benzene	.841	.866	.879	.839	1.019	.889	8.4	
[ ans-1,3-Dichloropropene	.424	.472	.464	.456	.554	.474	10.2	
3_omoform #	.431	.571	.577	.556	.659	.559	14.7#	
-Methyl-2-Pentanone	.312	.392	.347	.319	.397	.353	11.3	
!-Hexanone	.256	.304	.249	.241	.312	.272	12.1	
trachloroethene	. 645	.678	. 674	.639	.769	.681	7.6	
.,1,2,2-Tetrachloroethane #	.631	.706	.664	.646	.776	.685	8.5#	
'oluene*	.751	755	.752	.728	.863	.770	6.9*	
Tlorobenzene #	1.451	1.469	1.434	1.431	1.697	1.496	7.6#	
* nylbenzene*	.498	.533	.523	.509	.604	.533	7.8*	
tyrene	1.250	1.301	1.304	1.274	1.502	1.326	7.6	
ylene(total)	.753	.775	.740	.726	.913	.781	9.7	
diuene-d8	1.702	1.636	1.720	1.650	1.650	1.672	2.2	
romofluorobenzene	1.224	1.215	1.261	1.192	1.175	1.213	2.7	
, -Dichloroethane-d4	2.129	2.259	2.289	2.108	1.938	2.144	6.5	
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### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEMS
VOLATILES ANALYSES DATA
METHOD 524.2 ANALYSES

Samples Collected 5/12/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

All postive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be reevaluated.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was  $8^{\circ}$ C; cooler temperature for the UniFirst samples was  $7^{\circ}$ C. Temperatures outside the  $4^{\circ}$ C  $\pm 2^{\circ}$ C range may adversely affect the volatile compounds.

No positive results were reported in any of the samples in this sample delivery group.

Foaming, especially with Samples S6-15, S6-15DUP, and S5-10, occurred during analysis of all samples except the trip blank and field blanks.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 12, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
V140V3FS	3445	05/12/91
V140V3FB	3447	05/12/91
S1-15FB	3456	05/12/91
S5-10	3461	05/12/91
S6-15	3462	05/12/91
S6-15DUP	3463	05/12/91
S6-15TB	3464	05/12/91



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

Samples from the W.R. Grace treatment plant were preserved with ferrous ammonium sulfate and HCl. Holding times were met for both samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

### A. Initial

Initial calibration criteria were met on 5/16/91.

### B. Continuing

Continuing calibration criteria were met on 5/21/91 with the exception of the RF for 1,1-dichloroethane (actual 0.01137; criteria 0.1) and the % difference for 1,1-dichloroethane (actual 99.6; criteria 25). Detection limits for 1,1-dichloroethane were rejected in Sample V140V3FB.

Continuing calibration criteria were met on 5/22/91 (2:33) with the exception of the % difference for trans-1,2-dichloroethene (actual 28.21; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/22/91 (12:57) with the exception of the % difference for bromoform (actual 30.02; criteria 25). Data were not affected.



### IV. Blanks

The trip blank, field blanks, and method blanks were clean.

### V. Surrogate Recovery

The recoveries for toluene-d8 in Samples S6-15TB and S6-15MSD were below QC criteria. Because no positive results were reported for any field samples, data were not qualified.

All other surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-15. The percent recovery for toluene was below QC criteria in the MSD. The relative percent difference for toluene was above QC criteria. No positive results for this compound were detected, so no data were qualified.

The laboratory spiked the MS and MSD samples with twice the appropriate spiking compound concentrations. Data quality was not affected.

### VII. Field Duplicates

Samples S6-15 and S6-15DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

No positive results were reported for any of the samples in this sample delivery group.

### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined



through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Results and detection limits were acceptable with regard to the supporting data.

### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

### XII. System Performance

System performance was acceptable.



### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

00030

W. R. GRACE	PACE PROJECT	Number:	810512500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034456 05/12/91 05/12/91 <u>V140 V3 FS</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WA SING IN TO NO NO NO NO NO NO NO NO NO NO NO NO NO
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND : ND : ND : ND : ND :
trans-1,3-Dichloropropene Bromoform - Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene -	ug/L ug/L ug/L 	0.5 0.5 0.5 0.5 0.5	ND : ND : ND : ND : ND :
Ethyl benzene Xylene, total	ug/L - ug/L	0.5 0.5	ND

MDL ND

Method Detection Limit Not detected at or above the MDL.

1.1	R.	GRACE
М.	к.	UKACE

PACE Project Number: 810512500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL_	95 0034472 05/12/91 05/12/91 V140 V3 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODI Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	FIED ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND WJ END KILL ND WD R ND WJ ND WJ
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFIRST/ENSR	PACE Project Number:	810512	2501
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034561 05/12/91 05/12/91 S1-15 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MC Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	DDIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND WJ EED ALAIND ND ND ND ND ND ND ND ND ND ND ND ND N
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

# UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034618 05/12/91 05/12/91 S5-10
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W EXAMPLE  DD  DD  DD  DD  DD  DD  DD  DD  DD
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND -

Method Detection Limit Not detected at or above the MDL. MDL

ND

UNIFIRST/ENSR	PACE Project Number:	810512	501
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034626 05/12/91 05/12/91 S6-15
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MC Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	DDIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND LES ELS 119/41 1 ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

### UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034634 05/12/91 05/12/91 <u>S6-15 Dup</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride l,1-Dichloroethene l,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W & Langlan
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

# UNIFIRST/ENSR

PACE Project Number: 810512501

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0034642 05/12/91 05/12/91 S6-15 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND PRINCHE
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND :

MDL

Method Detection Limit Not detected at or above the MDL. ND



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/13/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991 Rev. 9/6/91

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limit in the Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Cooler temperature for the Grace samples was  $9^{\circ}$ C; cooler temperature for the UniFirst samples was  $18^{\circ}$  C when received in the laboratory. Temperatures outside the  $4^{\circ}$ C  $\pm 2^{\circ}$ C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccorate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Seven treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 13, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. S1-16 was used for the field duplicate, matrix spike, and matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
V131V4FS	3493	05/13/91
V131V4TB	3494	05/13/91
V154V4FS	3596	05/13/91
V197V4FS	3595	05/13/91
S1-16	3470	05/13/91
S1-16TB	3472	05/13/91
S4-14	3476	05/13/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All sample analyses met holding times.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met with the exception of 2-butanone which had an average RRF of 0.030 and %RSD of 39.8. Detection limits for 2-butanone were rejected.

#### B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/20	1:47	2-butanone Bromomethane Methylene Chi Benzene	0.032 (0.1) loride	32.9 (25) 26.5 (25) 26.7 (25)
5/20	14:24	2-Butanone Bromoform	0.024 (0.1)	28.3 (25) 29.1 (25)
5/21	7:54	2-Butanone	0.014 (0.)	56.1 (25)

#### () Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.



#### IV. Blanks

Methylene chloride was detected in the VBLK 01 at 3 ppb and in S1-16TB at 7 ppb. All other blanks were acceptable. Methylene chloride results were qualified as less than the reported values.

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

#### VII. Field Duplicates

Tetrachloroethene was detected in the sample at 3200 ppb, the field duplicate at 3500 ppb, in the MS at 3100 ppb, and in the MSD at 3000 ppb (RSD 6.8). The data are acceptable.

#### VIII. Internal Standards Performance

Internal standards areas and retention.times were acceptable.

#### IX. TCL Compound Identification

Target compounds were properly identified.

#### X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data. Trichloroethene was rejected from the field duplicate since it was not detected in the sample. 1,1,1-Trichloroethane was rejected from the MS and MSD since it was not detected in either the sample or field duplicate.

#### XI. Tentatively Identified Compounds

No TICs were detected.



#### XII. System Performance

System performance requires attention. Manual integrations should be addressed. Response factor criteria should be monitored.

### XIII. Overall Assessment of Data for a Case

Detection limits for 2-butanone were rejected in all samples.

Trichloroethene was rejected in the field duplicates  ${\tt MS}$  and  ${\tt MSD}$  analyses.

# VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

SDG No.:

Lab Sample ID: 3493.6

Matrix: (soil/water) WATER

Sample wt/vol: 5. (q/mL) ML

Lab File ID: G2973

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

74-87-3Chloromethane	CAS NO.	COMPOUND	CONCENTRA Lug/L or			Ω	
74-83-9Bromomethane	; ; 7.1_07_0	Chlawaankkaan			100	;	:
75-01-4	, /4-0/-3	Chioromethane		!		· <del>-</del>	i
75-00-3Chloroethane	74-03-3 1 75-01-1	U.svi Chlerida		:		10	
75-09-2Methylene Chloride	75-00-2	Chlorothan		;		1	:
67-64-1	, 75-00-3 ! 75-09-2	Mothylone Chlo		¦		. –	,
75-15-0	1 67-64-1	Acatona	1106	¦			,
75-35-41,1-Dichloroethene	75-15-0	Carbon Diculfi		;		. –	- :
75-34-31,1-Dichloroethane	75-25-4	1 1-Dichloroot	kene	· ;			
540-59-01.2-Dichloroethene (total)   1100.   67-66-3Chloroform   50.   U   107-06-21.2-Dichloroethane   50.   U   78-93-32-Butanone   100.   U   56-23-5Carbon Tetrachloride   50.   U   75-27-4Bromodichloromethane   50.   U   75-27-4Bromodichloromethane   50.   U   108-05-41.2-Dichloropropane   50.   U   10061-01-51.3-Dichloropropane   50.   U   10061-01-5Trichloroethene   360.   124-48-1Dibromochloromethane   50.   U   79-00-51.1.2-Trichloroethane   50.   U   77-43-2Benzene   50.   U   75-25-2Bromoform   50.   U   75-25-2Bromoform   50.   U   75-25-2Bromoform   50.   U   75-25-2Bromoform   50.   U   75-25-2Bromoform   50.   U   75-25-2Bromoform   50.   U   75-25-2Bromoform   50.   U   591-78-62-Hexanone   100.   U   591-78-62-Hexanone   50.   U   108-88-3Toluene   50.   U   108-88-3Toluene   50.   U   108-90-7Chlorobenzene   50.   U   100-41-4Ethylbenzene   50.   U   100-42-5Styrene   50.   U	· 75-33-4	1,1-Dichlordet	hene	;			
67-66-3Chloroform	. /5 54 5 ! 540-59-0	1 Parthioroet	hene (total)	· ;			
107-06-21.2-Dichloroethane	! 67-66-3	Chloroform	hene (cotal)	;		•	,
78-93-32-Butanone	107-06-3	1 2-Dichlorost		;		- <del>-</del>	- :
71-55-61.1.1-Trichloroethane	! 78-93-3	2-Butanone		· '			-
56-23-5Carbon Tetrachloride	1 71-55-6	1.1.1-Trichlor	cethane	;		•	!
108-05-4Vinyl Acetate		Carbon Tetrach	loride	;		. –	•
75-27-4Bromodichloromethane	108-05-4	Vinvl Acetate		;		· —	÷
78-87-51, 2-Dichloropropane       50.   U           10061-01-5cis-1, 3-Dichloropropene       50.   U           79-01-6Trichloroethene       360.           124-48-1Dibromochloromethane       50.   U           79-00-51, 1, 2-Trichloroethane       50.   U           71-43-2Benzene       50.   U           10061-02-6Trans-1, 3-Dichloropropene       50.   U           75 25 2Bromoform       50.   U           108-10-14-Methyl-2-Pentanone       100.   U           591-78-62-Hexanone       100.   U           127-18-4Tetrachloroethene       50.   U           79-34-5Toluene       50.   U           108-88-3Chlorobenzene       50.   U           100-41-4Ethylbenzene       50.   U           100-42-5Styrene       50.   U	75-27-4	Bromodichlorom	 ethane	<u>;</u>		. —	į
10061-01-5	78-87-5	1.2-Dichloropr	opane	:		. —	÷
79-01-6Trichloroethene       360.         124-48-1Dibromochloromethane       50.         79-00-51,1,2-Trichloroethane       50.         71-43-2Benzene       50.         10061-02-6Trans-1,3-Dichloropropene       50.         75-25-2Bromoform       50.         108-10-14-Methyl-2-Pentanone       100.         127-18-4Tetrachloroethene       50.         79-34-5Toluene       50.         108-88-3Toluene       50.         100-41-4Ethylbenzene       50.         100-42-5Styrene       50.	110061-01-5	cis-1.3-Dichlo	ropropene	<u>'</u>		. —	÷
124-48-1Dibromochloromethane	79-01-6	Trichloroethen	2	:		!	i
79-00-51,1,2-Trichloroethane       50.   U           71-43-2Benzene       50.   U           10061-02-6Trans-1,3-Dichloropropene       50.   U           75 25 2Bromoform       50.   U           108-10-14-Methyl-2-Pentanone       100.   U           591-78-62-Hexanone       100.   U           127-18-4Tetrachloroethene       50.   U           79-34-51,1,2,2-Tetrachloroethane       50.   U           108-88-3Toluene       50.   U           108-90-7Chlorobenzene       50.   U           100-41-4Styrene       50.   U	124-48-1	Dibromochlorom	ethane	:	50.	HU	i
71-43-2Benzene	: 79-00-5	1.1.2-Trichlor	oethane	<sub>:</sub>	50.		i
10061-02-6Trans-1,3-Dichloropropene	1 71-43-2	Benzene		:		-	•
75 25 2Bromoform 50.	110061-02-6	Trans-1.3-Dich	loropropene	;	56.	-	i
108-10-14-Methyl-2-Pentanone	1 75 25 2 -	ವೇರಾಗಭಾಗಿರುಗಾಗ			50.		:
591-78-62-Hexanone	108-10-1	4-Methv1-2-Pen	tanone	:	100.	ΙŪ	:
127-18-4Tetrachloroethene	591-78-6	2-Hewanone		;	100.	: U	;
79-34-51.1.2.2-Tetrachloroethane	127-18-4	Tetrachloroeth	5U6	:	50.	ŀU	;
108-88-3Toluene	: 79-34-5	1.1.2.2-Tetrac	hloroethane	;	50.	¦U	:
108-90-7Chlorobenzene	108-88-3	Toluene		:	50.	: U	;
100-41-4Ethylbenzene	108-90-7	Chlorobenzene		;	50.	:U	;
100-42-5Styrene 50.   U	100-41-4	Ethylbenzene		;	50.		:
1330-20-7Xylene(total) 50. (U)	100-42-5	Styrene		;	50.	ŀU	1
	1330-20-7	Xylene(total)		<u>:</u>	50.	ŧŪ	-

#### VOLATILE ORGANICS ANALYSIS DATA SHEET - TATIVELY IDENTIFIED COMPOUNDS

.: PACE

Contract:

. V131V4FS ;---0.0.0.2.1----;

ude: PACE Case No.: EPC SAS No.:

SDG No.:

rix: (soil water) WATER

Lab Sample ID: 3493.6

pample wt/vol: 5. (g/mL) ML

Lab File ID: 62973

·level: (low/med) LOW

Date Received: 5/14/91

( Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pach/cap) PACk

Number TICs found: 0

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

. CAS NUMBER	COMPOUND NAME	• • • • • • • • • • • • • • • • • • • •	EST. CONC.	
1				
3				:
5				1
7				1 1
				!!
11;				
13		!	·····	!!
15:		!		
17;				
20				
		;		
24.		,		
26				
28				
30				

FORM I VOA-TIC

1/87 Rev.

# 10 TILE ORGANICS ANALYSIS DATA SHEET

∨0=0 0-21B

ame: PACE Contract:

Code: PACE Case No.: EPC SAS No.: SDG No.:

utrix: (soil/water) WATER Lab Sample ID: 3494.4

Sample wt/vol: 5. 'g/mL' ML Lab File ID: 62988

Level: (low/med) LOW Date Received: 5/14/91

• / Moisture: not dec.100. Date Analyzed: 5/20/91

-Column: (pack/cap) PACk Dilution Factor: 1.00

		CONCENTRA	ATION U	VITS:		
CAS NO.	COMPOUND	(ug/L or	ug/k.g)	UG/L	C	.7
						<b>-</b>
1 74 07 0	<b>7.</b> 1				1	:
1 /4-8/-3	Chloromethane		!	10.		;
74-83-9	Bromomethane		!	10.	_	
75-01-4	Vinyl Chloride		!	10.		- 1
75-00-3	Chloroethane		<del>'</del>	10.	. —	i
75-09-2	Methylene Chlori	de	· !	5.	:U	;
67-64-1	Acetone		¦	10.	: U	:
/5-15-Q	Carbon Disulfide		i	5.	: U	ł
1 75-35-4	1.1-Dichloroethe	ne	¦	5.	ŧυ	;
1 75-34-3	1.1-Dichloroetha	ne		5.	; U	;
1 540-59-0	1.2-Dichloroethe	ne (total)	;	5.	:U	ť
67-66-3	Chloroform		;	5.	ΙU	1
1 107-06-2	1.2-Dichloroetha	ne	;	5.	IU	1
1 78-93-3	2-Butanone		;	- بير	+UP	- :
; 71-55-6	1.1.1-Trichloroe	thane	1	5.	: U	;
1 56-23-5	Carbon Tetrachlo	ride	;	5.	: U	;
108-05-4	Vinyl Acetate		!	10.	١U	}
1 75-27-4	Bromodichloromet	hane	;	5.	:U	;
: 78-87-5	1,2-Dichloroprop	ane	;	5.	; U	1
110061-01-5	cis-1.3-Dichloro	propene	:	5.	:U	1
1 79-01-6	Trichloroethene		:	5.	١U	ł
124-48-1	Dibromochloromet	hane	:	5.	¦U	- 1
1 79-00-5	1.1.2-Trichloroe	thane	;	5.	ŀU	1
1 71-43-2	Benzene		1	5.	١U	;
110061-02-6	Trans-1,3-Dichlo	ropropene	;	5.	: U	;
	Bromoform		;	5.	: U	1
108-10-1	4-Methyl-2-Penta	none	1	10.	:U	1
591-78-6	2-Hexanone		:	10.	١U	;
127-18-4	Tetrachloroethen	2	;	5.	ŧυ	;
1 79-34-5	1,1,2,2-Tetrachlo	oroethane	:	5.	١U	;
	Toluene			5.	١Ú	;
108-90-7	Chlorobenzene		;	5.	ŀŪ	
100-41-4	Ethylbenzene		;	5.	lÜ	•
100-42-5	Styrene		;	5.	:U	:
1330-20-7	Xylene(total)		;	5.	.U	:
	A TENE . Ow out I		<u>:</u>	~•	!	:
`					<i>'</i>	'

# VOLATILE ORGANICS ANALYSIS DATA SHEET T TATIVELY IDENTIFIED COMPOUNDS

. PACE

Contract:

V131V4TB 1\_\_00029\_\_\_\_\_

de: PACE Case No.: EPC SAS No.: SDG No.:

ix: (soil/water) WATER

Lab Sample ID: 3494.4

ample wt/vol: 5. (q/mL) ML

Lab File ID: G2988

\_\_evel: (low/med) LOW

Date Received: 5/14/91

. Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACk

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

. CAS NUMBER	COMPOUND NAME	: RT	: : EST. CONC.	
1				;
2		!		
3		!		!!
5.				:
6				¦;
7;				;;
8				
9				
10;				' <u>'</u>
12.				
13				
4 = 1				
12		i		
17				
18		!		!
19.				
71			i	
22.				
			,	
-,,-				
27.				;
28,				
				!
30				
		'		'

# VOI THE ORGANICS ANALYSIS DATA SHEET

PACE

Contract:

: PACE Case No.: EPC SAS No.: SDG No.:

.: (soil/water) WATER

Lab Sample ID: 3496.0

ېle wt/vol: 5. (g/mL) ML

Lab File ID: G2976

evel: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100.

Date Analyzed: 5/20/91

Tolumn: (pack/cap) PACk

Dilution Factor: 5.00

CAS NO. COMPOUND (ug/L or ug/kg) UG/L 0  74-87-3			CONCENTRATIO	ON UNITS:	
74-83-9Bromomethane       50. [U         75-01-4Vinv1 Chloride       50. [U         75-09-2Methylene Chloride       25. [U         67-64-1	CAS NO.	COMPOUND	(ug/L or ug.	/kg) UG/L	Ω
74-83-9Bromomethane       50. [U         75-01-4Vinv1 Chloride       50. [U         75-09-2Methylene Chloride       25. [U         67-64-1					
74-83-9Bromomethane       50. [U         75-01-4Vinv1 Chloride       50. [U         75-09-2Methylene Chloride       25. [U         67-64-1	1			1	1
75-01-4Vanv1 Chloride	1 74-87-3	Chloromethane		! 50.	: U :
75-01-4Vanv1 Chloride	1 74-83-9	Bromomethane		; 50.	(U)
75-09-3Chloroethane	75-01-4	Vinyl Chloride		50.	; U ;
75-09-2Methylene Chloride       25. IU         67-64-1Acetone       50. IU         75-15-0Carbon Disulfide       25. IU         75-35-41.1-Dichloroethene       25. IU         75-34-31.1-Dichloroethane       25. IU         540-59-01.2-Dichloroethane       25. IU         107-06-3Chloroform       25. IU         107-06-21.2-Dichloroethane       25. IU         78-93-32-Butanone       25. IU         71-55-61.1.1-Trichloroethane       25. IU         108-05-4Vinyl Acetate       50. IU         75-27-4Bromodichloromethane       25. IU         78-87-51,2-Dichloropropane       25. IU         10061-01-5cis-1,3-Dichloropropene       25. IU         79-01-6Trichloroethane       25. IU         79-00-51,1,2-Trichloroethane       25. IU         71-43-2Benzene       25. IU         10081-02-6Trans-1,2-Dichloropropene       25. IU         75-25-2Bromoform       25. IU         108-10-14-Methyl-2-Pentanone       50. IU         591-78-61,1,2,2-Tetrachloroethane       25. IU         108-88-3Toluene       25. IU         108-88-3Chlorobenzene       25. IU         100-41-4Ethylbenzene       25. IU </td <td>1 75-00-3</td> <td>Chloroethane</td> <td></td> <td>50.</td> <td>: U :</td>	1 75-00-3	Chloroethane		50.	: U :
67-64-1       S0.   U         75-15-0Carbon Disulfide       25.   U         75-35-41.1-Dichloroethene       25.   U         75-34-31.1-Dichloroethane       25.   U         540-59-01.2-Dichloroethane       25.   U         107-06-21.2-Dichloroethane       25.   U         107-06-21.1.1-Trichloroethane       25.   U         78-93-32-Butanone       25.   U         71-55-61.1.1-Trichloroethane       25.   U         108-05-4Vinyl Acetate       50.   U         75-27-4	75-09-2	Methylene Chlorid	e	25.	: 0 :
75-15-0Carbon Disulfide	1 67-64-1	Acetone		50.	:U :
75-35-41.1-Dichloroethene   25.  U   75-34-31.1-Dichloroethane   25.  U   540-59-01.2-Dichloroethene (total)   320.   67-66-3Chloroform   25.  U   107-06-21.2-Dichloroethane   25.  U   78-93-32-Butanone   25.  U   78-93-3Carbon Tetrachloroethane   25.  U   256-23-5Carbon Tetrachloride   25.  U   256-23-5Carbon Tetrachloride   25.  U   256-23-5Carbon Tetrachloride   25.  U   256-23-5Carbon Tetrachloride   25.  U   256-23-5Carbon Tetrachloride   25.  U   256-23-5Carbon Tetrachloride   25.  U   256-23-5	75-15-0	Carbon Disulfide		25.	{U }
75-34-31.1-Dichloroethane   25.   U   540-59-01.2-Dichloroethene (total)   320.     67-66-3	1 75-35-4	1.1-Dichloroethen	e	25.	: U
540-59-01,2-Dichloroethene (total)   320.   67-66-3Chloroform   25.   U   107-06-21,2-Dichloroethane   25.   U   78-93-32-Butanone   25.   U   56-23-5Carbon Tetrachloride   25.   U   75-27-4Bromodichloromethane   25.   U   75-27-4Bromodichloromethane   25.   U   108-05-41,2-Dichloropropane   25.   U   10061-01-51,2-Dichloropropane   25.   U   79-01-6Trichloroethene   300.   124-48-1Dibromochloromethane   25.   U   79-00-51,1,2-Trichloroethane   25.   U   71-43-2Benzene   25.   U   75-25-2Bromoform   25.   U   75-25-2Bromoform   25.   U   75-25-2Bromoform   25.   U   75-34-51,2,2-Tetrachloroethane   25.   U   79-34-5Tetrachloroethane   25.   U   25.   U   27-18-4Tetrachloroethane   25.   U   25.   U   27-18-4Tetrachloroethane   25.   U   25.   U   27-18-4	1 75-34-3	1.1-Dichloroethan	e	25.	: U :
107-06-21.2-Dichloroethane	1 540-59-0	1.2-Dichloroethen	e (total)	320.	; ;
107-06-21.2-Dichloroethane	1 67-66-3	Chloroform		25.	:U :
71-55-61.1.1-Trichloroethane   25.  U    56-23-5Carbon Tetrachloride   25.  U    108-05-4Vinyl Acetate   50.  U    75-27-4Bromodichloromethane   25.  U    78-87-51.2-Dichloropropane   25.  U    10061-01-5Trichloroethene   300.   124-48-1Dibromochloromethane   25.  U    79-00-51.1.2-Trichloroethane   25.  U    71-43-2Benzene   25.  U    71-43-2Bromoform   25.  U    75-25-2Bromoform   25.  U    108-10-14-Methyl-2-Pentanone   50.  U    591-78-62-Hexanone   50.  U    127-18-4Tetrachloroethene   25.  U    79-34-51.1.2.2-Tetrachloroethane   25.  U    108-88-3Toluene   25.  U    108-90-7Chlorobenzene   25.  U    100-41-4Ethylbenzene   25.  U    100-42-5Styrene   25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    25.  U    2	107-06-2	1.2-Dichloroethan	e	25.	
71-55-61.1.1-Trichloroethane   25.   U   56-23-5Carbon Tetrachloride   25.   U   108-05-4Vinyl Acetate   50.   U   75-27-4Bromodichloromethane   25.   U   78-87-51.2-Dichloropropane   25.   U   10061-01-5Cis-1.3-Dichloropropene   25.   U   79-01-6Trichloroethene   300.   124-48-1Dibromochloromethane   25.   U   79-00-51.1.2-Trichloroethane   25.   U   71-43-2Benzene   25.   U   71-43-2Bromoform   25.   U   75-25-2Bromoform   25.   U   75-15-2Bromoform   25.   U   27-18-4Tetrachloroethene   25.   U   27-18-4Tetrachloroethene   25.   U   27-18-4Tetrachloroethene   25.   U   25.   U   27-18-4Tetrachloroethene   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.	1 78-93-3	2-Butanone	;	به وينتشر	HER !
108-03-4Carbon Tetrachloride	1 71-55-6	1.1,1-Trichloroet	hane	25.	: U :
108-05-4Vinyl Acetate	: 56-23-5	Carbon Tetrachlor	ıde	25.	; U ;
75-27-4Bromodichloromethane	108-05-4	Vinyl Acetate		50.	:U :
78-87-51,2-Dichloropropane   25.   U   10061-01-5cis-1,3-Dichloropropene   25.   U   79-01-6Trichloroethene   300.   124-48-1Dibromochloromethane   25.   U   79-00-51,1,2-Trichloroethane   25.   U   71-43-2Benzene   25.   U   75-25-2Bromoform   25.   U   75-25-2Bromoform   25.   U   75-18-4Tetrachloroethene   50.   U   79-34-5Tetrachloroethene   25.   U   79-34-5Toluene   25.   U   79-34-5Toluene   25.   U   79-34-4Toluene   25.   U   79-34-4	1 75-27-4	Bromodichlorometh	ane	15.	:U :
10061-01-5cis-1,3-Dichloropropene   25.   U   79-01-6Trichloroethene   300.     124-48-1Dibromochloromethane   25.   U   79-00-51,1,2-Trichloroethane   25.   U   71-43-2Benzene   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U   25.   U	1 78-87-5	1,2-Dichloropropa	ne¦		:U :
79-01-6Trichloroethene       300.         124-48-1Dibromochloromethane       25.         79-00-51,1,2-Trichloroethane       25.         71-43-2Benzene       25.         10081-02-6Trans-1,2-Dichloropropene       25.         75-25-2Bromoform       25.         108-10-14-Methyl-2-Pentanone       50.         591-78-62-Hexanone       50.         127-18-4Tetrachloroethene       25.         108-88-3Toluene       25.         108-90-7Chlorobenzene       25.         100-41-4Ethylbenzene       25.         100-42-5Styrene       25.	110061-01-5	cis-1,3-Dichlorop	ropene:	25.	: ' '
124-48-1Dibromochloromethane	1 79-01-6	Trichloroethene _	!	300.	:
71-43-2Benzene	1 124-48-1	Dibromochlorometh	ane!		:U :
71-43-2Benzene	1 79-00-5	1,1,2-Trichloroet	hane!	25.	: U:
10061-02-6Trans-1,2-Dichloropropene	71-43-2	Benzene		25.	: U:
108-10-14-Methyl-2-Pentanone       50. IU         591-78-62-Hexanone       50. IU         127-18-4Tetrachloroethene       25. IU         79-34-5Toluene       25. IU         108-88-3Chlorobenzene       25. IU         100-41-4Ethylbenzene       25. IU         100-42-5Styrene       25. IU		Trans-1,2-Dichlor	opropene:	25.	:u :
108-10-14-Methyl-2-Pentanone       50. IU         591-78-62-Hexanone       50. IU         127-18-4Tetrachloroethene       25. IU         79-34-5Toluene       25. IU         108-88-3Chlorobenzene       25. IU         100-41-4Ethylbenzene       25. IU         100-42-5Styrene       25. IU	1 75-25-2	Bromoform		25.	:U :
127-18-4Tetrachloroethene	108-10-1	4-Methyl-2-Pentand	one :		: U:
127-18-4Tetrachloroethene	: 591-78-6	2-Hexanone		50.	:U :
79-34-51.1,2,2-Tetrachloroethane	127-18-4	Tetrachloroethene		25.	:U :
108-90-7Chlorobenzene	1 79-34-5	1,1,2,2-Tetrachlor	roethane:	25.	(U )
108-90-7Chlorobenzene	108-88-3	Toluene	;	25.	: U
100-41-4Ethylbenzene	108-90-7	Chlorobenzene	<b>:</b>	25.	:U :
100-42-5Styrene 25. (U)	100-41-4	Ethylbenzene	1		ΙU :
1330-20-7Xylene(total) 25. (U	100-42-5	Styrene	¦	25.	: 0
<del></del>	1330-20-7	Xylene(total)		25.	:u :
					11

#### VOLATILE ORGANICS ANALYSIS DATA SHEET T 'TATIVELY IDENTIFIED COMPOUNDS

, Name: PACE Contract:

V154V4FS · '----0-0-0-3-4---'

SDG No.:

Matrik: (Soil/water) WATER

Lab Sample ID: 3496.0

Sample wt/vol:

5. (a/ml) ML

Lab File ID: 62976

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACk

Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found:	0 (ug/L	or ug/Kg)	UG/L	
CAS NUMBER	COMPOUND NAME		EST. CONC.	
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FORM I VOA-TIC

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#### 1A VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V4F8

Lab Name: PACE

Contracts

1\_\_\_00040\_\_\_

Lab Code: PACE Case No.: EPC SAS No.:

BDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3495.2

Sample wt/vol: 5. (p/mL) ML

Lab File ID: G2989

CONCENTRATION LINITEL

Level: (low/med) LOW

Date Received: 5/14/91

% Mointure: not dec. 100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATIO		Q	
74.07.0	Chloromethane		100.	10	;
/ / / / / / / / / / / / / / / / / / /	Bromonsthans_		100.	iū	j
· /サーロラーサーー · フローロー・	Vinyl Chlorid		1500.	1	i
75-00-3	Chiorosthana_	**************************************	100.	iu	
75-09-2	Methylene Chl	ovide	50.	ίŬ	i
67-64-1	Acatone		100.	ĺŪ	ì
75-15-0	Carbon Disulf	Ide	50.	IU	į
75-35-4	1, 1-Dichlorge	thene	50.	١Ū	1
75-34-3	1, 1-Dichloroe	thane	30.	1U	1 //
540-59-0	1,2-Dichloroe	thene (total)	1700 50	- <del> U</del> -	M 9/4/9/
67-65-3	Chlaraform		50.	iũ	777
107-06-2	1.2-Dichloros	thans	50.	iū	1 . 1
78-93-3	2-Butanone		100.	-HU R	IRKA L.
71-55-6	1, 1, 1-Trichlo	roethane	50,	IN	1016191
1 56-23-5	Carbon Tetrac	hloride	50.	ĬÜ	14/51
1 108-05-4	Vinyl Acetate		100.	IÜ	1
1 75-27-4	Bromodichlore	methane	50.	ĬÜ	1
78-87-5	1,2-Dichlorop	ropans	50.	iu	1
110061-01-5	ciB-1,3-Dich1	oropropena	50.	ΙÜ	1
79-01-6	Trichlorosthe	UR ALL ALL ALL MANAGEMENT	83.	1	i
124-48-1	Dibromochloro	methans	50.	iu	t
79-00-5	1,1,2-Trichlo	roethane	50.	iŪ	,
71-43-2	Benzene		50.	iŭ	i
110061-02-6	Trans-1,3-Dic	hloropropano	50.	iŭ	,
75-25-2	Bramaform		50.	ŧΰ	i
1 108-10-1	4-Mathyl-2-Pm	ntanone	100.	เมื	1
1 591-78-6	2-Hexanone		100.	ίŪ	1
1 127-18-4	Tetrachloroet	hene	30.	IŪ	ţ
79-34-5	1,1,2,2-Tatra	chloronthame	50.	ŧū	
1 108-88-3	Toluens		30,	1 3	J
: 108-90-7	Chlorobenzene		50.	i u	1
1 100-41-4	Ethvlbenzone		30,	J	)
100-42-5			50.	1U	
1 1330-20-7	XVIBne(total)		50.	1U	١,
	The special country for the state out one say the size state and size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the size of the s				1 4

# VOLATILE ORGANICS ANALYSIS DATA SHEET

T TATIVELY IDENTIFIED COMPOUNDS

ETH SHITTLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE - Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3495.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2989

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pach/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

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CAS NUMBER	COMPOUND NAME	RT		: a :
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EPA SAMPLE NO.

51-0.0113

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (Soil/water) WATER Lab Sample ID: 3470.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2970

Level: (low/med) LOW Date Received: 5/14/91

% Moisture: not dec.100. Date Analyzed: 5/20/91

- Column: (pac)/cap) PACK Dilution Factor: 20.00

CAS	NO.	COMPOUND	(nā\r (oncei			 · - ·		α <b></b>
7.1	1-07-2	Chloromethane			;	200.	: : U	;
! 74	07-3	Bromomethane			¦	200.	: U	- :
7:	-01-4	Vinvl Chloride			;	200.	: []	
: 75	;-00-3	Chloroethane			¦	200.	; U	,
! 75	i-09-2	Methylane Chloric	<b>1</b> 0		:	340.	12	u :
67	-54-1	-Acetone	·~		· ;	200.	; U	!
1 75	-15-0	-Carbon Disulfide				100.	: 0	
1 75	-35-4	-1.1-Dichloroether			;	100.	i U	:
: 75	-34-3	-1,1-Dichloroethan	e			100.	١Ü	1
1 540	-59-0	-1.2-Dichloroether	e (tot	:al)	- 1	100.	٠Ū	;
: 67	-66-3	-Chloroform			;	100.	١U	;
107	-06-2	-1.2-Dichloroethan	e		;	100.	: U	1
1 78	-93-3	-2-Butanone			:	200.	4	R :
71	-55-6	-1.1,1-Trichloroet	hane _		;	100.	¦U `	1
: 56	-23-5	-Carbon Tetrachlor	ıde		;	100.	١U	;
108	-05-4	-Vinyl Acetate			;	200.	: U	;
1 75	-27-4	-Bromodichlorometh	ane		;	100.	: U	;
; 78	-87-5 <del>-</del>	-1,2-Dichloropropa	ne		;	100.	١U	1
110061	-01-5	-cis-1,3-Dichlorop	ropene		;	100.	۱u	1
1 79	-01-6	-Trichloroethene _			;	100.	١U	;
124	-48-1	-Dibromochlorometh	ane		:	100.	١U	;
1 79	-00-5	-1.1,2-Trichloroet				100.	١U	;
71	-43-2	-Benzene			;	100.	١U	;
110061	-02-6	-Trans-1.3-Dichlor				100.	iü	;
	-25-2				;	166.	; ;;	ï
108	-10-1	-4-Methyl-2-Pentan	one		;	200.	; U	;
591	-78-6	-2-Hexanone			;	200.	١U	1
127	-18-4	-Tetrachloroethene			;	3200.	;	;
79	-34-5	-1,1,2,2-Tetrachlo	roetha	ne .	;	100.	١U	;
108	-88-3	-Toluene			;	100.	: U	1
108	-90-7	-Chlorobenzene			;	100.	!U	;
100-	-41-4	-Ethylbenzene			;	100.	١U	;
100-	-42-5	-Styrene			;	100.	١U	;
1330-	-20-7	-Xylene(total)			¦	100.	; ∪ ;	:

#### 1 = VOLATILE ORGANICS ANALYSIS DATA SHEET T TATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: S1-16

EPA SAMPLE NU.

:\_\_\_\_00114

Matrix: (soil/water) WATER

Lab Sample ID: 3470.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2970

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	; ; RT	: : EST. CONC.	Ω :
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# VOLALLE ORGANICS ANALYSIS DATA SHEET

ab Name: PACE

Contract:

ab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3470.7

\_ample wt/vol:

5. (g/mL) ML

Lab File ID: G2901

evel: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/15/91

olumn: (pack/cap) PACK

Dilution Factor:

1.00-20

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

74-87-3	200 10 10 100 100 5 100	ממממממממממממממממ
75-01-4Vinyl Chloride 75-00-3Chloroethane 75-09-2Methylene Chloride 67-64-1	200 10 10 100 5 10	מממממממממממממממ
75-00-3Chloroethane 75-09-2Methylene Chloride 67-64-1Acetone 75-15-0Carbon Disulfide 75-35-41,1-Dichloroethene 75-34-31,2-Dichloroethene 540-59-01,2-Dichloroethene (total) 67-66-3Chloroform 107-06-21,2-Dichloroethane 78-93-32-Butanone 71-55-61,1,1-Trichloroethane 56-23-5Carbon Tetrachloride 108-05-4Vinyl Acetate 75-27-4Bromodichloromethane 78-87-51,2-Dichloropropane 10061-01-5	200 to 100 5	ממממת ממממממממ
75-09-2Methylene Chloride 67-64-1Acetone 75-15-0Carbon Disulfide 75-35-41,1-Dichloroethene 75-34-31,1-Dichloroethene 540-59-01,2-Dichloroethene (total) 67-66-3Chloroform 107-06-21,2-Dichloroethane 78-93-32-Butanone 71-55-61,1,1-Trichloroethane 56-23-5Carbon Tetrachloride 108-05-4Vinyl Acetate 75-27-4Bromodichloromethane 78-87-51,2-Dichloropropane 0061-01-5	100 5 200 <del>101</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del>	מ מ מ מ מ מ מ מ מ מ מ מ מ
75-15-0Carbon Disulfide 75-35-41,1-Dichloroethene 75-34-31,1-Dichloroethene 75-34-31,2-Dichloroethene (total) 67-66-3	200 <del>101</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del> 100 <del>5</del>	מ מ מ מ מ מ מ מ מ מ מ מ
75-15-0	100 5 100 5 100 5 100 5 100 5 100 5 100 5 100 5	ם ם ם ם ם ם ם ם ם ם
75-35-41,1-Dichloroethene 75-34-31,1-Dichloroethane 540-59-01,2-Dichloroethene (total) 67-66-3Chloroform 107-06-21,2-Dichloroethane 78-93-32-Butanone 71-55-61,1,1-Trichloroethane 56-23-5Carbon Tetrachloride 108-05-4Vinyl Acetate 75-27-4Bromodichloromethane 78-87-51,2-Dichloropropane 10061-01-5cis-1,3-Dichloropropene 79-01-6Trichloroethene 124-48-1Dibromochloromethane 79-00-51,1,2-Trichloroethane 71-43-2Benzene .0061-02-6Trans-1,3-Dichloropropene 75-25-2Bromoform	100 5. 100 5. 100 5. 100 5. 100 5. 100 5. 100 5. 100 5. 100 5.	ם מם מם מם מם מם מ
75-34-31,1-Dichloroethane 540-59-01,2-Dichloroethene (total) 67-66-3Chloroform 107-06-21,2-Dichloroethane 78-93-32-Butanone 71-55-61,1,1-Trichloroethane 56-23-5Carbon Tetrachloride 108-05-4Vinyl Acetate 75-27-4Bromodichloromethane 78-87-51,2-Dichloropropane 10061-01-5cis-1,3-Dichloropropene 79-01-6Trichloroethene 124-48-1Dibromochloromethane 79-00-51,1,2-Trichloroethane 71-43-2Benzene .0061-02-6Trans-1,3-Dichloropropene 75-25-2Bromoform	100 5. 100 5. 100 5. 100 5. 100 5. 100 5. 100 5. 100 5. 100 5.	ם מ מ מ מ מ מ מ מ
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75-25-2Bromoform	100 5	เบ
	100 5.	Ū
	200 10.	บ
591-78-62-Hexanone	200 10.	U
127-18-4Tetrachloroethene	3500 180.	}
79-34-51,1,2,2-Tetrachloroethane	100 5	ט
108-88-3Toluene	/e0 <del>5</del> .	Ü
108-90-7Chlorobenzene	1005.	Ü
100-41-4Ethylbenzene	100 5	Ü
100-42-5Styrene	1005	U
1330-20-7Xylene(total)	1005	บ

Resubmitted Data

### VOLA' LE ORGANICS ANALYSIS DATA SHEET TEN\_ATIVELY IDENTIFIED COMPOUNDS

SI-16DUP

ab Name: PACE

Contract:

EPA SAMPLE NO.

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Lab Sample ID: 3470.7

clample wt/vol:

5. (g/mL) ML

Lab File ID: G2901

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100.

Date Analyzed: 5/15/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

00121

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2				
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23				
24				
25. 26.				
27.				
`-28				
29				
30				

EPA SAMPLE NO.

S1-16 TB

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3472.3

! Sample wt/vol: 5. (g/mL) ML Lab File ID: G2971

Level: (low/med) LOW Date Received: 5/14/91

% Moisture: not dec.100. Date Analyzed: 5/20/91

Column: (Dac)/cap) PACk Dilution Factor: 1.00

#### CONCENTRATION UNITS:

CAS	NO.	COMPOUND	(ug/L or	ug/Kg)		Ω	
;				:		<del></del>	;
; 7	'4-87-3	-Chloromethane		:	10.	· <del>-</del>	:
; 7	'4-83 <b>-</b> 9	-Bromomethane		;	10.	: U	;
; 7	5-01-4	-Vinyl Chloride		;	10.	ΙU ΄	- 1
; 7	5-00-3	-Chloroethane		!	10.	10	†
; 7	5-09-2	-Methylene Chlorid	de	'	7.	wu	• ;
1 6	7-64-1	-Acetone		;	10.	: U	1
- 1 /	<b>ン-1シ-()</b>	-Carbon Disultide		<b>i</b>	5.	:U	;
1 7	5-35-4	-1,1-Dichloroether	ne	!	5.	:U	1
; 7	5-34-3	-1,1-Dichloroethar	re	;	5.	: ប	;
; 54	0-59-0	-1,2-Dichloroether	ne (total)	;	5.	:U	- 1
; 6	7-66-3	-Chloroform		;	5.	IU	;
- 10	7-06-2	-1.2-Dichloroethar	ne	;	5.	;U _	;
; 7	8-93-3	-1-Butanone		;	10.	WR	;
. 7	1-55-6	-1,1.1-Trıchloroet	:hane	;	5.	¦U	;
: 5	6-23-5	-Carbon Tetrachlor	.1qe	:	5.	¦ U	;
1 10	8-05-4	-Vinyl Acetate		;	10.	:U	1
7	5-27-4	-Bromodichlorometh	ane	:	5.	: U	1
1 7	8-87-5	-1.2-Dichloropropa	ne	;	5.	:U	;
11006	1 <i>-</i> 01 <i>-</i> 5	-cıs-1.3-Dichlorop	ropene	1	5.	!U	1
7	9-01-6	-Trichloroethene $\_$		:	5.	l U	;
12	4-48-1	-Dibromochlorometh	ane	;	5.	¦U	;
1 7	9-00-5	-1.1,2-Trichloroet	hane	:	5.	l U	1
7	1-43-2	-Benzene		:	5.	!U	1
11006	1-02-6	-Benzene -Trans-1,3-Dichlor	opropene	;	ຣ.	:U	;
75	5-25-2	-Bromoform		1	. 5.	١U	:
108	3-10-1	-4-Methyl-2-Pentan	one	;	10.	:U	1
: 59:	1-78-6	-2-Hexanone		:	10.	!U	;
1 127	7-18 <b>-4</b>	·Tetrachloroethene		;	5.	:U	;
1 79	9-34-5	1,1,2,2-Tetrachlo	roethane	;	5.	:U	1
1 08	3-88-3	Toluene		¦	5.	: ប	:
1 108	3-90-7	Chlorobenzene		;	5.	l U	:
100	)-41-4	Ethylbenzene		;	5.	l U	;
100	)-42-5 <b></b> -	Styrene		;		: U	
1330	)-20-7	Xylene(total)			5.	: U	:
1				:	<del></del>	!	:
·						·	- '

#### VOLATILE ORGANICS ANALYSIS DATA SHEET T TATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: S1-16 TB

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3472.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2971

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACk

Number TICs found: 0

Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

	!	 !		<del></del> :
: CAS NUMBER	COMPOUND NAME	! RT	EST. CONC.	: O ;
1.		;		;;
		!		!;
3				!!
4		<u> </u>		!!
6		'		' ' !
7				::
8				!!
9				
11.		' '		, ;
1 121		,		!!
13		!		
14				
16				<b>.</b>
17		:	;	
18				
1 20.	i	,		
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		!	!	;
1 00				!
1 30.				!
			'	'

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# VOL TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3476.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63003

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION	UNITS:
---------------	--------

CAS NO.	COMPOUND	(ma/r ox			(	Ω
;			;			;
1 74-87-3-	Chloromethane		;	100.	١U	;
1 74-83-9-	Bromomethane		:;	100.	١U	;
1 75-01-4-	Vinyl Chloride		;	100.	١U	;
1 75-00-3-	Chloroethane		:;	100.	١U	;
1 75-09-2-	Methylene Chlorid	ie .	:	50.	١U	:
1 67-64-1-	Acetone		;	100.	١U	;
; /5-15-0-	Carbon Disultide_		i	50.	١U	;
1 75-35-4-	1.1-Dichloroether	ne	!	50.	١U	:
1 75-34-3-	1.1-Dichloroethar	e	:	50.	١U	:
1 540-59-0-	1.2-Dichloroether	ne (total	);	50.	١U	1
1 67-66-3-	Chloroform		;	50.	١U	;
107-06-2-	1.2-Dichloroethar	ne	}	50.	:U	;
1 78-93-3-	2-Butanone		1	190.	W P	2 :
71-55-6-	1.1.1-Trichloroet	hane	;	50.	:υ΄	:
1 56-23-5	Carbon Tetrachlor	ıde	<u> </u>	50.	10	;
108-05-4-	Vinyl Acetate			100.	:U	1
1 75-27-4	Bromodichlorometh	ane	!	50.	· U `	:
1 78-87-5-	1.2-Dichloropropa	ne	;	50.	١U	;
110061-01-5	cis-1,3-Dichlorop	ropene	!	50.	١U	;
79-01-6	Trichloroethene		:	50.	ŧυ	;
124-48-1	Dibromachlarameth	ane	;	50.	٠u	1
79-00-5	1.1.2-Trichloroet	hane	!	50.	١U	;
: 71 <b>-</b> 43-2	Benzene		:	50.	١U	;
110061-02-6	Trans-1,3-Dichlor	opropene	;	50.	···	
! 75-25-2	നേറ്റാനാദ്		;	50.	ن ،	i
: 108-10-1	4-Methyl-2-Pentan	one	!	100.	١U	;
: 591-78-6	2-Hexanone		!	100.	١U	;
127-18-4	Tetrachloroethene		;	1500.	:	;
79-34-5	1.1,2,2-Tetrachlo	roethane	:	50.	:υ	;
108-88-3	Toluene		;	50.	: U	;
108-90-7	Chlorobenzene		;	50.	: U	;
100-41-4	Ethylbenzene		1	50.	: U	t
100-42-5	Styrene		;	50.	: U	;
1330-20-7	Xylene(total)			50.	١U	1
					. !	:
<del></del>				<del>-</del>		

#### VOLATILE ORGANICS ANALYSIS DATA SHEET T TATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: 54-14

SDG No.: 00134

Matrix: (soil/water) WATER

Lab Sample ID: 3476.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3003

Level: (low/med) LOW

Date Received: 5/14/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pach/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	: RT	EST. CONC.	; Q ;
1 1.		•	•	!!
1 2.		1		;;
3				
4				!:
				!:
				!!
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8		; <u> </u>		<b>!</b>
10				'
11				· ·
1 12				
13				
14	***************************************	'i		
15				!
16    17.				;
17	i			;
				;
		:		:
AA 1		;	;	;
23i		i		i
24			!	i
		!	!	!
26		;		
	!	;	<del></del> !	
20		!	i	
70				;
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DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/13/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

All positive results and detection limits were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be reevaluated.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was  $9^{\circ}\text{C}$ ; cooler temperature for the UniFirst samples was  $18^{\circ}\text{C}$ . Temperatures outside the  $4^{\circ}\text{C}$   $\pm 2^{\circ}\text{C}$  range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 13, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection	
S1-16FB	3471	05/13/91	
S5-11	3477	05/13/91	
S6-16	3479	05/13/91	
S6-16TB	3480	05/13/91	
V140V4FS	3491	05/13/91	
V140V4FB	3492	05/13/91	
S6-15TB	3464	05/12/91	



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
    - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

Samples from the W.R. Grace treatment plant were preserved with ferrous ammonium sulfate and HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for almost all compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/16/91.

#### B. Continuing

Continuing calibration criteria were met on 5/21/91 with the exception of the RF for 1,1-dichloroethane (actual 0.01137; criteria 0.1) and the % difference for 1,1-dichloroethane (actual 99.6; criteria 25). Detection limits for 1,1-dichloroethane were rejected in Sample V140V4FB.

Continuing calibration criteria were met on 5/22/91 (12:57) with the exception of the % difference for bromoform (actual 30.02; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/23/91.



#### IV. Blanks

The trip blank, field blanks, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V4FS. The percent recoveries for 1,1-dichloroethene were below QC criteria in the MS and MSD. No positive results for this compound were detected, so no data were qualified.

The laboratory spiked the MS and MSD samples with twice the appropriate spiking compound concentrations. Data quality was not affected.

#### VII. Field Duplicates

Samples V140V4FS and V140V4FD were submitted as duplicate samples. However, the laboratory apparently did not run Sample V140V4FD, but ran V140V4FS as a laboratory duplicate. Clarification has been requested from the laboratory. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:



Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group were qualified as estimated because of the manual integration of areas for most of the compounds.

UNIFIRST	PACE Project Number:	810514500	0.00.3.3
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	0 0 0 0 3 3 95 0034715 05/13/91 05/14/91 S1-16 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524. Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	2 MODIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND W. S. E. C. D. ND ND ND ND ND ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND ND ND ND
Bromodichloromethane 1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Benzene trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene	ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Chlorobenzene Ethyl benzene Xylene, total	ug/L ug/L ug/L	0.5 0.5 0.5	ND   ND   ND

MDL Method Detection Limit Not detected at or above the MDL. ND

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PACE Project Number: 810514500

<u>Units</u>	MDL	95 0034774 0 0 0 3 7 05/13/91 05/14/91 <u>S5-11</u>
ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W 2 2/9/41 ND W 2 2/61 ND W 2 1/9/41
ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND 24.6 25 J M/ 7/5/9/ ND ND 7/5/9/
ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
ug/L ug/L	0.5 0.5	ND ND
	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	ug/L 0.5 ug/L 0.5

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Project Number: 810514500 UNIFIRST

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0034790 0 0 0 4 4 05/13/91 05/14/91 S6-16
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W Exalalal ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND ND ND ND
Bromodichloromethane 1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Benzene trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Chlorobenzene Ethyl benzene Xylene, total	ug/L ug/L ug/L	0.5 0.5 0.5	ND ND ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

PACE Project Number: 810514500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034804 00048 05/13/91 05/14/91 S6-16 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US Expansion
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

# W. R. GRACE

# PACE Project Number: 810514501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034910 05/13/91 05/14/91 V140 V4 FS
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W.J. &C.J./41/-11 ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene	ug/L	0.5	ND -

Method Detection Limit
Not detected at or above the MDL. MDL

ND

# W. R. GRACE

PACE Project Number: 810514501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0034928 0 0 0 6 0 05/13/91 05/14/91 V140 V4 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W CKN 1991 ND / 1991 ND R ND W
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit
ND Not detected at or above the MDL.



#### DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA Samples Collected May 13, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in Samples S1-16 or S6-16; bis(2-ethylhexyl)phthalate was detected in S1-16FB at 63 ppb. No qualifiers have been applied to these reported results. One early-eluting unknown peak observed in all sample analyses has been rejected as a blank contaminant; the presence of tetrachloroethene in S6-16 is noted but not reported since it is more accurately determined from the volatile fraction.

Problems identified on the Chain of Custody (COC) records include: (1) 3 COC's are included although only 2 are pertinent to this data package; (2) separate entries should not be made for MS/MSD samples; (3) cross-outs are incorrectly made and are not initialled or dated; and (4) cold storage is not clearly documented.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.



#### Case Narrative

Five water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 13, 1991 and received by Pace, Inc. on May 14, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

Client ID	<u>Lab ID</u>	<u>Collection Date</u>
S1-16	3470	5/13/91
S1-16 FB	3471	5/13/91
S6-16	3479	5/13/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810514.500.



#### Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were placed in cold storage in the field, at the time of collection. This activity is inferred from notations of cooler temperature on arrival at the laboratory. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. In several cases, areas for surrogate peaks have also been manually integrated; these must be documented in the data package due to the potential effect on the reported results. The data in this SDG are not affected as no positive results are reported with the exception of a low level of bis(2-ethylhexyl)phthalate in the field blank.

#### A. Initial

Samples were analyzed under a single initial calibration (IC) performed on 6/17/91, on instrument 7001D. All criteria were met in this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 3-nitroaniline (37.8) and diethyl phthalate (36.3). No data are affected.

#### B. Continuing

All samples, including the MS/MSD and SBLK1, were analyzed on 6/18/91 under a separate continuing calibration (CC) standard. All criteria were met in this calibration with the exception of the Percent Difference (%D) for bis(2-chloroisopropyl)ether (41.2), fluorene (28.9), 4-nitroaniline (29.9), 3,3'-dichlorobenzidine (37.8), and 2,4,6-tribromophenol (31.6). No data are affected.



#### IV. Blanks

No target compounds were detected in SBLK1, extracted 5/17 and analyzed 6/18. No tentatively identified compounds were reported, however a peak at retention time (RT) approximately 7.5 minutes is visible in the chromatogram, prior the first surrogate standard. A peak at the same relative retention time was reported in Samples S1-16FB (analyzed 6/19) and S1-16 (analyzed 6/18), and was observed but not reported in S6-16. These sample results have been rejected as blank contaminants. Library searches of the peaks in SBLK1 and S6-16 were requested from and provided by the laboratory; they are attached to this report for reference, and confirm this peak as a blank contaminant.

Bis(2-ethylhexyl)phthalate was detected in the field blank, S1-16 FB, at 63 ug/L. This compound was not detected in any other samples; no data are affected.

#### V. Surrogate Recovery

All surrogate recoveries were within established QC criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample S1-16. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within established QC criteria.

#### VII. Field Duplicates

No field duplicate pairs were analyzed in this SDG.

#### VIII. Internal Standards Performance

All internal standard areas and retention times are within acceptable limits.

### IX. TCL Compound Identification

Compound identifications are properly reported and documented in all cases.



#### X. Compound Quantitation and Reported Detection Limits

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

#### XI. Tentatively Identified Compounds

One early-eluting TIC was rejected in Sample S1-16 and in Sample S1-16 FB due to observation of a similar peak at the same retention time in both the field blank and SBLK1. The same peak was observed in Sample S6-16 but was not reported; a library search was provided by the laboratory at the request of this validator, and is attached to this report. The documentation confirms this peak as a blank contaminant.

The Case Narrative states that tetrachloroethene was detected as a TIC in Sample S6-16, and was not reported because it is a volatile analyte. No library search was included in the package to document this fact. The library search for this peak was requested and has been provided by the laboratory to confirm the identification of this peak; a copy is attached to this report for reference. The reported value is rejected because it is a volatile target compound, and is more accurately reported in that fraction.

#### XII. System Performance

No problems with system performance were observed in the data package. It is noted, however, that the ribbon on the GC/MS data system printer needs to be replaced, as the copies of the printouts are very light and almost illegible.

#### XIII. Overall Assessment

Sample results are usable as reported with the exception of the early-eluting TIC peak which has been rejected in all 3 samples, and the tetrachloroethene response which has been rejected in favor of its quantitation from the volatile fraction.

Incomplete, unclear, or inaccurate Chain of Custody records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the custody records included in this data package:

1. More custody records are included than are pertinent to this data package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.



- 2. Cold storage, a required form of preservation, is not documented.
- 3. MS/MSD analyses are a <u>laboratory-initiated</u> quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".
- 4. Cross-outs on the records are not initialled and dated, and they are not done as a single line through the incorrect entry.

Manually integrated areas should be documented in the data package to allow review of the integration method used and to confirm that the integration was consistent in both standards and samples, where applicable. This is especially important when areas for internal standards and/or surrogates are manually integrated.

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract: S6-16 0 0 0 3 5

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3479.0

\_ample wt/vol: 1000. (g/mL) ML Lab File ID: D2706

evel: (low/med) LOW Date Received: 5/14/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91

xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/19/91

CPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

			τ
108-95-2	Phenol	10.	U
108-95-2	bis(2-Chloroethyl)ether	10.	ט
111-44-4	2-Chlorophenol	10.	U
	1,3-Dichlorobenzene	10.	U
541-/3-1	1 4 Dichlorobenzene	10.	U
106-46-/	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	บ
95-48-7	2-Methylphenol	10.	Ū
108-60-1	bis(2-Chloroisopropyl)ether	10.	บ
106-44-5	4-Methylphenol	10.	ט
621-64-7	N-Nitroso-di-n-propylamine_	10.	ט
	Hexachloroethane	i –	Ü
	Nitrobenzene	10.	U
	Isophorone	10.	1 "
88-75-5	2-Nitrophenol	10.	Ü
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	` 50.	U
111-91-1	bis(2-Chloroethoxy)methane_	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	ŢŢ
91=20=3===	Naphthalene	10.	TT 
	4-Chloroaniline	10.	U
	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	บ
22-06-2	2,4,6-Trichlorophenol	10.	U
05-05-4	2,4,5-Trichlorophenol	50.	U
01_50_7	2-Chloronaphthalene	10.	U
91-56-7	2-Nitroaniline	50.	U
33-74-4	Dimethylphthalate	10.	U
131-11-3		10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	Į.	

SEMIVOLAT E ORGANICS ANALYSIS DATA SHEET

S6-16

b Name: PACE

Contract:

00036

Lab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

matrix: (soil/water) WATER

1000. (g/mL) ML

Lab Sample ID: 3479.0

Lab File ID: D2706

ample wt/vol:

Date Received: 5/14/91

Level: (low/med) LOW

Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

"xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/19/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

CONCENTRATION UNITS: CAS NO.

COMPOUND (ug/L or ug/Kg) UG/L

99-09-23-Nitroaniline	50.	U
83-32-9Acenaphthene	10.	U
51-28-52,4-Dinitrophenol	50.	U
100-02-74-Nitrophenol	50.	U
132-64-9Dibenzofuran	10.	U
121-14-22,4-Dinitrotoluene	10.	U
84-66-2Diethylphthalate	10.	U
7005-72-34-Chlorophenyl-phenylether	10.	U
86-73-7Fluorene	10.	ט
100-01-64-Nitroaniline	50.	U
534-52-14,6-Dinitro-2-methylphenol	50.	U
86-30-6N-Nitrosodiphenylamine	10.	U
101-55-34-Bromophenyl-phenylether	10.	U
118-74-1Hexachlorobenzene	10.	U
87-86-5Pentachlorophenol	50.	U
85-01-8Phenanthrene	10.	U
120-12-7Anthracene	10.	U
84-74-2Di-n-butylphthalate	10.	ט
206-44-0Fluoranthene	10.	U
129-00-0Pyrene	10.	U
85-68-7Butylbenzylphthalate	<u>i</u> n.	tt
91-94-13,3'= <u>Dichlarahenzidine</u>	20	TT
56-55-3Benzo(a) anthracene	10.	U
218-01-9Chrysene	10.	U
117-81-7bis(2-Ethylhexyl)phthalate	10.	ប
117-84-0Di-n-octylphthalate	10.	ט
205-99-2Benzo(b) fluoranthene	10.	U
207-08-9Benzo(k) fluoranthene	10.	U
50-32-8Benzo(a)pyrene	10.	U
193-39-5Indeno(1,2,3-cd)pyrene	10.	U
53-70-3Dibenzo(a,h)anthracene	10.	U
191-24-2Benzo(g,h,i)perylene	10.	U

# SEMIVOLAT E ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

ab Name: PACE

Contract:

S6-16	
	00037

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

1.atrix: (soil/water) WATER

Lab Sample ID: 3479.0

! imple wt/vol: 1000. (g/mL) ML

Lab File ID: D2706

Level: (low/med) LOW

Date Received: 5/14/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/17/91

Fritraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/19/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

number TICs found: Ø /

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	UNKNOWN K*	<del>- 7.38</del>		
3				
5	* black contaminant  CAE 7/5/91			
7				
9				
10.				
12.				
L4 ·				
16.				
17.				
20.		İ		
1				
23				
_5				
26. 7.				
29.				
· · · · · · · · · · · · · · · · · · ·				

# 1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

o Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3470.7

3 mple wt/vol: 1000. (g/mL) ML Lab File ID: D2703

\_^vel: (low/med) LOW Date Received: 5/14/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91

traction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/18/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
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108-95-2Phenol	10.	ט
111-44-4bis(2-Chloroethyl)ether	10.	ט
95-57-82-Chlorophenol	10.	U
541-73-11,3-Dichlorobenzene	10.	U
106-46-71,4-Dichlorobenzene	10.	U
100-51-6Benzyl alcohol	_ 10.	U
95-50-11,2-Dichlorobenzene	10.	U
95-48-72-Methylphenol	] 10.	U
108-60-1bis(2-Chloroisopropyl)ether	10.	U
106-44-54-Methylphenol	_ 10.	U
621-64-7N-Nitroso-di-n-propylamine_	10.	U
67-72-1Hexachloroethane	10.	U
98-95-3Nitrobenzene	10.	ט
78-59-1Isophorone	10.	U
88-75-52-Nitrophenol	10.	U
105-67-92,4-Dimethylphenol	10.	U
65-85-0Benzoic acid	50.	ט
111-91-1bis(2-Chloroethoxy)methane	10.	U
120-83-22,4-Dichlorophenol	10.	U
120-82-11.2.4-Trichlorobenzene	10.	U
91-20-3Naphthalene	10.	🖯
106-47-84-Chloroaniline	10.	ט
87-68-3Hexachlorobutadiene	10.	U
59-50-74-Chloro-3-methylphenol	10.	U
91-57-62-Methylnaphthalene	10.	ַט
77-47-4Hexachlorocyclopentadiene	10.	ប
88-06-22,4,6-Trichlorophenol	10.	U
95-95-42,4,5-Trichlorophenol	50.	U
91-58-72-Chloronaphthalene	10.	U
88-74-42-Nitroaniline	50.	U
131-11-3Dimethylphthalate	10.	Ū
208-96-8Acenaphthylene	10.	U
506-20-22,6-Dinitrotoluene	10.	U

S1-16

ab Name: PACE

Contract:

0.001.0

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Lab Sample ID: 3470.7

: imple wt/vol: 1000. (g/mL) ML Lab File ID: D2703

Level: (low/med) LOW Date Received: 5/14/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91

Fxtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/18/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

		,, 3, -, -	-
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	ט
51-28-5	2,4-Dinitrophenol	50.	ט
100-02-7	4-Nitrophenol	50.	ט
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	ַט
87-86-5	Pentachlorophenol	50.	ַ
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	ט
129-00-0	Pyrene	10.	ַט
85-68-7	Butylbenzylphthalate	10.	บ
91-94-1	3.3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b) fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	Ū

# SEMIVOLA' E ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

b Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

\_atrix: (soil/water) WATER Lab Sample ID: 3470.7

ample wt/vol: 1000. (g/mL) ML Lab File ID: D2703

Level: (low/med) LOW Date Received: 5/14/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91

Fytraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/18/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	2
1.	UNKNOWN	7.38	<del>20.</del>	- <del>3</del>
2	Tetrachlorocthere R*1	* <del>~ 6.8</del>		<b>├</b>
3.		-		
4.				
5	* blank contaminant			
6.	** VOA target compound - Ye	control in the	st faction	
7	30.00	The same of the sa		
8	Cae 3	14191	<del></del>	
9		<i>+</i> <del>                                    </del>		
0		-  -		
1	<b>-</b>	-		
2		-     -		
3.		-     -		
3 ·		-		
•		-		
ś • <del></del> -		-     -		
5.		-  -		
7 •		·  -		
3	_	.  -	<del></del>	
9. D.		· j j -		
·		· j		
		.  -		
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•		ll_	. <u></u>	
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# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

\$1-16FB

Matrix: (soil/water) WATER Lab Sample ID: 3471.5

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2707

evel: (low/med) LOW Date Received: 5/14/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91

xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/19/91

TPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

108-95-2Phenol	10.	U
111-44-4bis(2-Chloroethyl)ether	10.	U
95-57-82-Chlorophenol	10.	U
541-73-11,3-Dichlorobenzene	10.	U
106-46-71,4-Dichlorobenzene	10.	ប
100-51-6Benzyl alcohol	10.	U
95-50-11,2-Dichlorobenzene	10.	U
05 40 7 0 Wath-3-1-	10.	U
108-60-1bis(2-Chloroisopropyl)ether	10.	ט
106-44-54-Methylphenol	10.	U
621-64-7N-Nitroso-di-n-propylamine	10.	U
67-72-1Hexachloroethane	10.	ַ
98-95-3Nitrobenzene	10.	ט
78-59-1Isophorone	10.	U
88-75-52-Nitrophenol	10.	ט
105-67-92,4-Dimethylphenol	10.	U
65-85-0Benzoic acid	50.	ט
111-91-1bis(2-Chloroethoxy) methane	10.	ט
120-83-22,4-Dichlorophenol	10.	ט
120-82-11,2,4-Trichlorobenzene	10.	U
91-20-3Naphthalene	10.	ly
106-47-84-Chloroaniline	10.	U
87-68-3Hexachlorobutadiene	10.	ט
59-50-74-Chloro-3-methylphenol	10.	U
91-57-62-Methylnaphthalene	10.	U
77-47-4Hexachlorocyclopentadiene	10.	U
88-06-22,4,6-Trichlorophenol	10.	ט
95-95-42,4,5-Trichlorophenol	50.	ט
91-58-72-Chloronaphthalene	10.	U
88-74-42-Nitroaniline	50.	U
131-11-3Dimethylphthalate	10.	U
208-96-8Acenaphthylene	10.	U
606-20-22,6-Dinitrotoluene	10.	U
•		

# SEMIVOLA: E ORGANICS ANALYSIS DATA SHEET

ab Name: PACE Contract:

Tab Code: PACE Case No.: EPC SAS No.: SDG No.:

matrix: (soil/water) WATER Lab Sample ID: 3471.5

ample wt/vol: 1000. (g/mL) ML Lab File ID: D2707

Level: (low/med) LOW Date Received: 5/14/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91

xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/19/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

99-09-23-Nitroaniline 83-32-9Acenaphthene 51-28-52,4-Dinitrophenol 100-02-74-Nitrophenol 132-64-9Dibenzofuran 121-14-22,4-Dinitrotoluene 84-66-2Diethylphthalate 7005-72-34-Chlorophenyl-phenylether	50. 10. 50. 50. 10. 10.	ט ט ט ט ט ט
83-32-9Acenaphthene 51-28-52,4-Dinitrophenol 100-02-74-Nitrophenol 132-64-9Dibenzofuran 121-14-22,4-Dinitrotoluene 84-66-2Diethylphthalate 7005-72-34-Chlorophenyl-phenylether	10. 50. 50. 10. 10. 10.	n n n
51-28-52,4-Dinitrophenol 100-02-74-Nitrophenol 132-64-9Dibenzofuran 121-14-22,4-Dinitrotoluene 84-66-2Diethylphthalate 7005-72-34-Chlorophenyl-phenylether	50. 50. 10. 10. 10.	n n n
100-02-74-Nitrophenol 132-64-9Dibenzofuran 121-14-22,4-Dinitrotoluene 84-66-2Diethylphthalate 7005-72-34-Chlorophenyl-phenylether	50. 10. 10. 10. 10.	U U U
132-64-9Dibenzofuran  121-14-22,4-Dinitrotoluene  84-66-2Diethylphthalate  7005-72-34-Chlorophenyl-phenylether	10. 10. 10. 10.	U U U
121-14-22,4-Dinitrotoluene 84-66-2Diethylphthalate 7005-72-34-Chlorophenyl-phenylether	10. 10. 10.	U U U
84-66-2Diethylphthalate	10. 10. 10.	ט
7005-72-34-Chlorophenyl-phenylether	10. 10.	1 -
24, 20 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		
86-73-7Fluorene	= i	ľŪ
100-01-64-Nitroaniline	50.	ט
534-52-14,6-Dinitro-2-methylphenol	50.	U
86-30-6N-Nitrosodiphenylamine	10.	U
101-55-34-Bromophenyl-phenylether	10.	U
118-74-1Hexachlorobenzene	10.	ט
87-86-5Pentachlorophenol	50.	U
85-01-8Phenanthrene	10.	U
120-12-7Anthracene	10.	ט
84-74-2Di-n-butylphthalate	10.	U
206-44-0Fluoranthene	10.	U
129-00-0Pyrene	10.	U
85-68-7Butylbonzylphthalate	10.	ŢŢ
91-94-13,37-Dichlorobenzidine	20.	[1]
56-55-3Benzo(a) anthracene	10.	ט
218-01-9Chrysene	10.	U
117-81-7bis(2-Ethylhexyl)phthalate	63.	
117-84-0Di-n-octylphthalate	10.	U
205-99-2Benzo(b) fluoranthene	10.	U
207-08-9Benzo(k)fluoranthene	10.	Ū
50-32-8Benzo(a)pyrene	10.	Ū
193-39-5Indeno(1,2,3-cd)pyrene	10.	Ū
53-70-3Dibenzo(a,h)anthracene	10.	U
191-24-2Benzo(g,h,i)perylene	10.	ប

#### 1F

# SEMIVOLAT E ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-16FB

ab Name: PACE

Contract:

Tab Code: PACE Case No.: EPC SAS No.:

SDG No.:

matrix: (soil/water) WATER

Lab Sample ID: 3471.5

ample wt/vol: 1000. (g/mL) ML

Lab File ID: D2707

Level: (low/med) LOW

Date Received: 5/14/91

Date Extracted: 5/17/91

<traction: (SepF/Cont/Sonc) SEPF</pre>

Moisture: not dec.100. dec. 0.

Date Analyzed: 6/19/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	UNKNOWN	7.38	20.	<del>J</del>
4	* Wank contaminant			
5		79,		
3 9				
0 1 2				
3 4.				
5. 5. 7.				
3 ·				
•				



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING

PESTICIDES/PCBS ANALYSES DATA

Samples Collected 05/13/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in the pesticide/PCB fraction.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable. (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the quantitation limit or the detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Data Validation for Environmental Project Control, Inc.

Samples Collected May 13, 1991

#### Pesticide/PCB Analyses Data

#### Case Narrative

Three treatment system samples were collected May 13, 1991 and submitted to Pace, Inc. May 14, 1991. The laboratory was requested to perform pesticide/PCB target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the 4 $^{\rm O}$ C  $\pm$  2 $^{\rm O}$ C range may adversely affect the more volatile compounds.

No TCL compounds were detected in the pesticide/PCB fraction.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3470	S1 <b>-</b> 16	05/13/91
3471	S1-16FB	05/13/91
3479	S6-16	05/13/91

The areas reviewed during validation are listed below.



#### ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment of Data for a Case



#### DATA VALIDATION

# I. Sample Holding Times

All samples were extracted and analyzed within holding times.

#### II. Instrument Performance

DDT retention time was greater than or equal to 12 minutes.

Retention time windows were reported on Form IX for each column used.

Retention times and calibration factors were accurately recorded on Form IX.

DDT/Endrin degradation was less than 20%.

DBC retention time met the 1.5% criteria for wide-bore capillary columns on the DB-5 and DB-608 columns.

#### III. Calibration

### Initial Calibration Linearity Check Inst V63400 06/03-05/91

The DB608 column used for quantitation met the 10% relative standard deviation (%RSD) criteria. The DB5 column used for confirmation failed to meet the %RSD criteria for the following compounds:

aldrin (19%) endrin (26%) 4,4'-DDT (15%)

These compound were not detected and no data have been qualified.

#### Analytical Run Sequence

All standards were run within 72 hours.

#### Continuing Calibration

The column used for quantitation met the 15% D criteria.

The column used for confirmation met the 20% D criteria.



#### IV. Blanks

No TCL compounds were detected in BLKW17.

#### V. Surrogate Recovery

Surrogate recoveries were acceptable.

#### VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike recoveries for the following compounds were outside the established advisory limits:

gamma-BHC (23%) dieldrin (40%) endrin (45%)

Matrix spike duplicate recoveries for the following compounds were outside established advisory limits:

gamma-BHC (29%) dieldrin (50%) endrin (54%)

These compounds were not detected in the unspiked sample and no data were qualified.

Gamma-BHC, heptachlor and endrin failed to meet RPD criteria. These compounds were not detected in the unspiked sample and no data have been qualified.

#### VII. Field Quality Control Samples

S1-16FB is a field blank. No TCL compounds were detected.

## VIII. Internal Standards Performance

Standard performance based on the retention time windows was acceptable.

#### IX. TCL Compound Identification

No target compounds were detected.



# X. Compound Quantitation and Reported Detection Limits

Detection limit quantifications were acceptable with regard to supporting data.

# XI. Tentatively Identified Compounds

Not Applicable.

# XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

No TCL compounds were detected.

1D
PESTLLIDE ORGANICS ANALYSIS DATA SHEET

ab Name: PACE Contract: EPC S1-16 -0.0017

Case No.: ab Code: PACE SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3470.7

ample wt/vol: 1000. (g/mL)ML Lab File ID: V66597

Level: (low/med) LOW Date Received: 5/14/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/4/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L CAS NO. COMPOUND Q

210-94-6				
773-04-0	Alpha-BHC		.050	U
319-85-7	Beta-BHC	• _	.050	Ū
	Delta-BHC		.050	Ū
	Gamma-BHC		.050	Ū
76-44-8	Heptachlor		.050	U
309-00-2	Aldrin		.050	ט
1024-57-3	Heptachlor Epoxid	e	.050	ט
959-98-8	Endosulfan I		.050	U
60-57-1	Dieldrin		.10	U
72-55-9	4,4'-DDE		10	U
72-20-8	Endrin		.10	U
33213-65-9	Endrin Endosulfan II		.10	U
72-54-8	4 . 4 '-DDD		.10	U
1031-07-8	Endosulfan Sulfat	е .	.10	U
50-29-3	4,4'-DDT		.10	U
72-43-5	Methoxychlor		.50	U
53494-70-5	Endrin Ketone	<b></b>	.10	ט
5103-71-9	alpha-Chlordane		.50	U
5103-74-2	gamma-Chlordane	-	.50	U
8001-35-2	Toxaphene		1.0	U
12674-11-2	Arochlor-1016		.50	U
11104-28-2	Arochlor-1221		.50	U
11141-16-5	Arochlor-1232		.50	U
53469-21-9	Arochlor-1242		.50	U
12672-29-6	Arochlor-1248		.50	U
11097-69-1	Arochlor-1254		1.0	U
11096-82-5	Arochlor-1260		1.0	ַ

#### ID PESTILIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract: EPC S1-16FB

ab Code: PACE Case No.: SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3471.5

ample wt/vol:

Lab File ID: V66601

1000. (g/mL)ML

Date Received: 5/14/91

Level: (low/med) LOW

Date Extracted: 5/17/91

Moisture: not dec.100. dec. 0.

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/4/91

1.00

PC Cleanup: (Y/N) N pH: 7.0

Dilution Factor:

CONCENTRATION UNITS:

CAS NO. COMPOUND

(ug/L or ug/Kg) UG/L

	<del></del>	
319-84-6Alpha-BHC 319-85-7Beta-BHC 319-86-8Delta-BHC 58-89-9Gamma-BHC 76-44-8Heptachlor 309-00-2Aldrin 1024-57-3Heptachlor Epoxide 959-98-8Endosulfan I 60-57-1Dieldrin 72-55-94 Al-DDF	.050 .050 .050 .050 .050 .050 .050	זממממממממ
72-55-94,4'-DDE 72-20-8Endrin	.10	ט
33213-65-9Endosulfan II	.10	U
72-54-84,4'-DDD	.10	U
1031-07-8Endosulfan Sulfate	.10	U
50-29-34,4'-DDT	.10	U
72-43-5Methoxychlor	.50	ט
53494-70-5Endrin Ketone	.10	U
5103-71-9alpha-Chlordane	.50	U
5103-74-2gamma-Chlordane	.50	U
8001-35-2Toxaphene	1.0	U
12674-11-2Arochlor-1016	.50	U
11104-28-2Arochlor-1221	.50	U
11141-16-5Arochlor-1232	.50	U
53469-21-9Arochlor-1242	.50	U
12672-29-6Arochlor-1248	.50	U
11097-69-1Arochlor-1254	1.0	ប
11096-82-5Arochlor-1260	1.0	ט

# 1D PEST\_IDE ORGANICS ANALYSIS DATA SHEET

Name: PACE Contract: EPC

560629

ib Code: PACE Case No.: SAS No.: SDG No.:

imple wt/vol: 1000. (g/mL)ML Lab File ID: V66604

\_evel: (low/med) LOW Date Received: 5/14/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/17/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/4/91

'C Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L Q

319-84-6	Alpha-BHC		.050	U
	Beta-BHC		.050	Ü
	Delta-BHC		.050	Ü
	Gamma-BHC		.050	บั
	Heptachlor		.050	Ŭ
309-00-2		;	.050	Ü
	Heptachlor Epoxid	le	.050	Ū
959-98-8	Endosulfan I		.050	Ū
60-57-1	Dieldrin		.10	Ū
	4,4'-DDE		.10	Ū
72-20-8			.10	ט
33213-65-9	Endosulfan II		.10	ט
72-54-8	4,4'-DDD		.10	U
	Endosulfan Sulfat	e	.10	ַ
50-29-3	4,4'-DDT	İ	.10	U
72-43-5	Methoxychlor	j	.50	ט
53494-70-5	Endrin Ketone		.10	U
, 5103-71 <b>-</b> 9	alpha-Chlordane	)	.50	ט
5103-74-2	gamma-Chlordane		.50	U
8001-35-2	Toxaphene		1.0	ט
12674-11-2	Arochlor-1016		.50	U
11104-28-2	Arochlor-1221		.50	U
11141-16-5	Arochlor-1232		.50	ט
53469-21-9	Arochlor-1242		.50	U
12672-29-6	Arochlor-1248	J	.50	ַט
11097-69-1	Arochlor-1254	ë j	1.0	U
11096-82-5	Arochlor-1260	į	1.0	Ŭ



# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

INORGANIC ANALYSES DATA

Samples Collected 5/13/91, 5/14/91, & 5/19/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

Metals analytical data presented for this sample delivery group were fair. Much of the data was qualified as estimated. In addition, several positive sample results were rejected due to blank contamination. All unqualified positive sample data may be used without reservation.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Inorganic Data Validation

for

# Environmental Project Control, Inc.

# Samples Collected 5/13/91, 5/14/91 & 5/19/91

#### Case Narrative

This group contained sixteen water samples including five field blanks to be analyzed for total metals and cyanide.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
S1 <b>-</b> 16	3470	5/13/91
S1-16FB	3471	5/13/91
S1A-14 (1)	3473	5/13/91
S6-16	3479	5/13/91
V140M5 (2)	3521	5/14/91
V131M5 (2)	3522	5/14/91
V131M5FB (2)	3523	5/14/91
V140C5 (3)	3524	5/14/91
V131C5 (3)	3525	5/14/91
V131C5FB (3)	3527	5/14/91
V131M10 (2)	3714	5/19/91
V140M10 (2)	3713	5/19/91
V140M10FB (2)	3716	5/19/91
V140C10 (3)	3701	5/19/91
V131C10 (3)	3702	5/19/91
V131C10FB (3)	3704	5/19/91

- (1) Iron and manganese only
- (2) Metals only(3) Cyanide only

The areas reviewed during validation are listed below.



#### CLP Inorganics Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
  - IV. ICP Interference Check Sample
  - V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
  - XII. Other QC
- XIII. Overall Assessment



#### Data Validation

#### I. Holding Times

All metals analyses were conducted within acceptable holding times.

Cyanide analyses were conducted within acceptable holding times.

#### II. Calibration

Calibrations for metals were satisfactory.

One of the standards analyzed to establish the calibration curve for AA must be at the CRDL. The CRDL for antimony is 60 ppb, and the highest standard analyzed was 45 ppb. Since antimony was not detected in any sample, data quality was not affected.

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. The SOW states that "if the 2xCRDL standard for ICP is not within ± 20% of the true value, results near the CRDL are questionable. Estimate (J) positive results less than 3xCRDL and (UJ) non-detected results." Positive results and detection limits for chromimun and silver were estimated.

Cyanide calibration was acceptable.

#### III. Blanks

No preparation or calibration blanks were above the CRDLs or less than the negative CRDLs.

Continuing calibration blank for antimony (-0.5 ppb) was less than the negative IDL.

Field blank S1-16FB contained copper (7.0 ppb), iron (133 ppb), lead (0.90 ppb), and zinc (29 ppb). Field blank V131M5 contained cadmium (0.1 ppb), lead (0.9 ppb), and zinc (36 ppb). Field blank V140M10FB contained copper (6.0 ppb), lead (0.5 ppb), sodium (451 ppb), and zinc (18 ppb). Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value where appropriate.



Because of the negative blank values reported for antimony, detection limits were raised to 1.3 U.

#### IV. ICP Interference Check Sample

Interference check sample results were satisfactory.

#### V. Matrix Spike Sample Analysis

Spike recoveries not meeting criteria are summarized below.

Sample	Analyte	Recovery	(%)
S1-16	Arsenic	70.5	
	Barium	9.2	
	Silver	28.0	
V131M5	Arsenic	66.2	
	Barium	9.6	
	Selenium	73.0	
	Silver	52.0	
V131M10	Arsenic	73.8	
	Barium	10.4	
	Chromium	131.0	
	Iron	125.2	
	Silver	52.0	

Positive results and detection limits for arsenic, barium, and silver were estimated (J). Detection limits for barium were rejected (R). Positive chromium and iron results for samples associated with V131M10, and selenium detection limits for samples associated with V131M5 were estimated (UJ).

Cyanide spike results were acceptable.

#### VI. Duplicate Sample Analysis

Duplicate analyses results for metals were satisfactory.

Cyanide duplicate results were acceptable.

#### VII. Laboratory Control Sample Analyses

Laboratory control sample results were satisfactory.



#### VIII. Furnace Atomic Absorption Analysis

Duplicate injections were performed for all samples and agreed within  $\pm 20\%$ .

The method of standard additions was not required.

#### IX. ICP Serial Dilution Analysis

Serial dilutions were conducted on S1-11. All results met the validation criteria of 15%.

#### X. Detection Limits

Instrument detection limits (IDLs) should be less than the contract required detection limits (CRDLs). The IDL reported for mercury is equal to its CRDL. Mercury was not detected in any of the samples, so no data were qualified.

#### XI. Sample Result Verification

Sample results were acceptable as reported.

#### XII. Other QC

Samples were not analyzed for total and dissolved metals. Therefore, no additional QC was available.

#### XIII. Overall Assessment

A standard at twice the CRDL was analyzed for ICP analytes. All analytes met the acceptance criteria with the exception of silver which was not recovered. Positive results and detection limits for chromimum and silver were estimated.

Continuing calibration blank for antimony (-0.5 ppb) was less than the negative IDL.

Field blank S1-16FB contained copper, iron, lead, and zinc. Field blank V131M5 contained cadmium, lead, and zinc. Field blank V140M10FB contained copper, lead, sodium, and zinc.

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value where appropriate.



Because of the negative blank values reported for antimony, detection limits were raised to 1.3 U.

Because of spike recoveries, positive results and detection limits for arsenic, barium, and silver were estimated (J). Detection limits for barium were rejected (R). Positive chromium and iron results for samples associated with V131M10 and selenium detection limits for samples associated with V131M5 were estimated (UJ).

\_\_\_\_

E.A	SAMPLE	NO.

	1		
INORGANIC	ANALYSES	DATA	SHEET 003

S1-16	<u> </u>
Cas No.	
Cas No.	
Cas No.	.7
Cas No.	4/91
CAS No.	
T429-90-5	
T440-36-0	2117
T440-36-0	41.,
T440-38-2	
Table   Tabl	
T440-41-7	
T440-43-9	
7440-70-2       Calcium       87800	
T440-47-3	
T440-48-4	
T440-50-8	
7439-89-6	
T439-92-1	
7439-95-4 7439-96-5 Manganese 7439-97-6 Mercury 7440-02-0 Nickel 7782-49-2 Selenium 7440-22-4 Silver 7440-23-5 Sodium 7440-62-2 Vanadium 7440-66-6 Cyanide  10300 P P P P P P P P P P P P P P P P P P	
7439-96-5       Manganese       1.5       U       P         7439-97-6       Mercury       0.20       U       CV         7440-02-0       Nickel       8.6       U       P         7440-09-7       Potassium       2640       B       P         7782-49-2       Selenium       0.50       U       F         7440-22-4       Silver       11.0       N       P         7440-23-5       Sodium       78100       P         7440-28-0       Thallium       0.70       U       W       F         7440-62-2       Vanadium       4.2       U       P         7440-66-6       Zinc       115       U       P         Cyanide       10       U       AS	
7439-97-6   Mercury   0.20   U   CV   7440-02-0   Nickel   8.6   U   P   P   7782-49-2   Selenium   0.50   U   F   F   7440-22-4   Silver   11.0   N   P   P   7440-28-0   Thallium   0.70   U   W   F   F   7440-66-6   Zinc   115   U   AS   P   P   Thallium   The state of the sta	
7440-02-0       Nickel       8.6       U       P         7440-09-7       Potassium       2640       B       P         7782-49-2       Selenium       0.50       U       F         7440-22-4       Silver       11.0       N       P         7440-23-5       Sodium       78100       P         7440-28-0       Thallium       0.70       U       W       F         7440-62-2       Vanadium       4.2       U       P         7440-66-6       Zinc       115       U       P         Cyanide       10       U       AS	
7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6 Cyanide  2640 B U F F F F F F F T 78100 P T T T T T T T T T T T T T T T T T T	
7782-49-2   Selenium   0.50   U   F	
7440-22-4   Silver	
7440-23-5   Sodium   78100     P	
7440-62-2 Vanadium 4.2 U P 7440-66-6 Zinc 115 U N Cyanide 10 U AS	
7440-62-2 Vanadium 4.2 U P 7440-66-6 Zinc 115 U P Cyanide 10 U AS	
7440-66-6 Zinc 115 U P AS	
Cyanide 10   U     AS	
lor Before: COLORLESS Clarity Before: CLEAR_ Texture:	
lor After: COLORLESS Clarity After: CLEAR_ Artifacts:	
mments:	

#### U.S. EPA - CLP

# 1 INORGANIC ANALYSES DATA SHEET

ELA	SAMPLE	NO.

0	0	0	3	4

	00034	S1-16FB
tract:	EPC	

ab Name: PACE_INCOR	PORATED	Contract: EPC	
Lab Code:	Case No.:	_ SAS No.:	SDG No.:
atrix (soil/water):	WATER	Lab Sampl	e ID: 3471.5
Tevel (low/med):	LOW	Date Rece	ived: 05/14/91
soliās:	0		

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

						$\sim$
CAS No.	Analyte	Concentration	С	Q	M	7
7429-90-5	Aluminum	195	ซ		P	
7440-36-0	Antimony_	0.80_	U		F_	
7440-38-2	Arsenic_	1.0	ប	3	F_	
7440-39-3	Barium -	12.5	U	- 3	P	
7440-41-7	Beryllium	1.1	U		P_	
7440-43-9	Cadmium	3.0	บ		P	
7440-70-2	Calcium	448	บ		P	
7440-47-3	Chromium	9.5	ប	3	P_	
7440-48-4	Cobalt	6.4	ប		P	
7440-50-8.	Copper	7.0	B		P_	
7439-89-6	Iron	133	'		P_	
7439-92-1	Lead	0.90	8		F_	-
7439-95-4	Magnesium	509_	บ		P_	
7439-96-5	Manganese	1.5_	บ		P_	
7439-97-6	Mercury	0.20	ប		c⊽	
7440-02-0	Nickel	8.6_	U		P_	
7440-09-7	Potassium	760_	บ		P_	
7782-49-2	Selenium_	0.50	U		F_	
7440-22-4	Silver	8.1	ប	7	<b>P</b> _	
7440-23-5	Sodium	390	បៈ		P_	
7440-28-0	Thallium_	0.70	ប	W	F_	
7440-62-2	Vanadium_	4.2	ប		P_	
7440-66-6	Zinc	29.0			P_	
	Cyanide	10_	บิ		AS	

Jlor	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
lor	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
ommer	nts:						
							_

Er-A	SAMPLE	NO.

 	011111	
		יווחחח

Lab Name:	PACE	_incorpora	TED	Contract: E	•	035		S1A-14
Lab Code:		c	ase No.:	SAS No.	: _		SDO	3 No.:
		 ater): WAT	ER		Lā	ab Samp	le II	D: 3473.1
Level (lo	w/med	): LOW	<del></del>		Da	ate Rec	eive	d: 05/14/91
. Solids:		<del></del>	_0					-
t	Coi	ncentratio	n Units (ug	/L or mg/kg dr	y v	weight)	UG,	/L_
		CAS No.	Analyte	Concentration	С	Q	M	
		7429-90-5	Aluminum		-		NR	
		7440-36-0	· · · · · ·				NR	
		7440-38-2					NR	
		7440-39-3			_		NR	
			Beryllium		_		NR	
		7440-43-9					NR	
		7440-70-2			_		NR	
	i	7440-47-3	1 · · · · · · · · · · · · · · · · · · ·		_		NR	
		7440-48-4			_		NR	
_		7440-50-8			=		NR	
		7439-89-6		97.7_	Ū		P_	
		7439-92-1			-		NR	
		7439-95-4			ច		NR	
		7439-96-5	_	1.5_	اما		P_	
		7439-97-6			-		NR NR	
		7440-02-0			-		NR	
		7440-09-7  7782-49-2			-		NR	
		7440-22-4			-	<del></del>	NR	
		7440-23-5			-		NR	
		7440-28-0			-		NR	
		7440-62-2			-		NR	
		7440-66-6	-				NR	
		17440 00 0	Cyanide_		-		NR	
					_			
olor Bef	ore:	COLORLESS	Clari	ty Before: CLE	AR_	-	Text	ure:
Color Aft	er:	COLORLESS	Clari	ty After: CLE	AR_	-	Arti	ifacts:
Comments:								

					. —	
ab Name: PACE	_INCORPORATE	ED	Contract:	00036 EPC	_	S6-16
ab Code:	Cas	se No.:	SAS No	··:	_ S1	DG No.:
Matrix (soil/wa	ater): WATE	ર		Lab Sa	mple :	ID: 3479.0
evel (low/med)	): LOW	_		Date R	eceive	ed: 05/14/91
solids:		)				
Cor	ncentration	Units (ug,	/L or mg/kg d	lry weigh	t): U	· - ,
	CAS No.	Analyte	Concentration	on C Q	M	P 7 17 91

i	CAS No.	Analyte	Concentration	C	Q	М	1 71 171°
	7429-90-5	Aluminum	195	ีซิ		P_	
	7440-36-0	Antimony	0.80	ט		F	İ
i	7440-38-2	Arsenic	1.0	שׁ	TWH Z	F_	
	7440-39-3	Barium	19.0	ъ.	二 十 二	P	
	7440-41-7	Beryllium	1.1	บ		P	
	7440-43-9	Cadmium	3.0	บ		P_	
	7440-70-2	Calcium	93800			P	
	7440-47-3	Chromium	9.5	บิ	-5	P	
	7440-48-4	Cobalt	6.4	บ		P	
	7440-50-8	Copper	8.0	B	u	P	
	7439-89-6	Iron	216		u	P.	
	7439-92-1	Lead	2.1	<del>ā</del>	- <del>-₩</del> U	F	
	7439-95-4	Magnesium	10800			P	
ļ	7439-96-5	Manganese	3.0	₽		P_	
l	7439-97-6	Mercury	0.20	ַ ט		cv	
	7440-02-0	Nickel	8.6	U		P	
	7440-09-7	Potassium	2930_	В		P_	
	7782-49-2	Selenium_	0.50	ַט		F_	
	7440-22-4	Silver	10		_W	P_	
	7440-23-5	Sodium	83100_	_		<b>P</b> _	
	7440-28-0	Thallium_	0.70_	บ		F_	
	7440-62-2	Vanadium_	4.2_	U		P_	
	7440-66-6	Zinc	139	_	<u> </u>	P_	
		Cyanide	10	บ		AS	

olor Be	fore:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
olor Af	ter:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
omments	:						

#### U.S. EPA - CLP

	0.00				
	INORGANIC A	l ANALYSES DATA S	SHEET	E	SAMPLE NO.
INCORPORATI	ED	Contract: El		3 7	V140M5
_ Cas	se No.:	SAS No.:		SDG	No.:
ter): WATE	2		Lab Samp	le ID:	3521.5
LOW_	•		Date Rece	eived:	05/15/91
	Ò				
centration	Units (ug/	L or mg/kg dry	y weight)	: UG/L	<u>_</u>
7429-90-5 7440-36-0 7440-38-2 7440-43-9 7440-43-9 7440-47-3 7440-48-4 7440-50-8 7439-95-4 7439-95-4 7439-95-6 7440-02-0 7440-02-0 7440-23-5 7440-28-0 7440-62-2	Mercury_Nickel_PotassiumSelenium_Silver_Sodium_Thallium_Vanadium	195	# U U U U U U U U U U U U U U U U U U U	M   P   F   P   F   P   P   P   F   P   P	Pan 7/17/91
	Cas Cer): WATER LOW Centration CAS No.  7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-47-3 7440-48-4 7440-50-8 7439-95-4 7439-95-4 7439-95-4 7439-95-4 7439-95-4 7439-95-4 7439-95-4 7439-95-4 7439-95-4 7439-95-4 7440-23-5 7440-23-5 7440-28-0	Case No.:  Cer): WATER  LOW	INCORPORATED Contract: EXECUTED: WATER  LOW	INORGANIC ANALYSES DATA SHEET    O 0 0 3	INORGANIC ANALYSES DATA SHEET

olor	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
Color	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
Commer	nts:						
				· · · · · · · · · · · · · · · · · · ·		<del></del>	<del></del>

EFA	SAMPLE	NO.

ab Name: PACE	INCORPORAT	ED	() ( Contract: E	0038 PC	V131M5
ab Code:	_	se No.:		•	SDG No.:
atrix (soil/w	ater): WATE	R		Lab Sample	e ID: 3522.3
evel (low/med	): LOW_	_		Date Rece	ived: 05/15/91
Solids:		0			
Co	ncentration	Units (ug,	/L or mg/kg dry	y weight):	UG/L_
	CAS No.	Analyte	Concentration	C Q	M P2/17/9/
	7429-90-5	Aluminum	195	<del> </del>	P ' ' '
	7440-36-0	Antimony		<del> </del>	F-
	7440-38-2	Arsenic	1.5		F
	7440-39-3	Barium	29.0		P_
	7440-41-7			0	P
	7440-43-9	Cadmium	0.12	B - 1	F
	7440-70-2	Calcium	47600		P_
	7440-47-3	Chromium	9.5	<u>u</u> 3	P_
	7440-48-4	Cobalt		u	P_
	7440-50-8	Copper		l <b>u</b> l 1:	P
	7439-89-6	Iron	965		P_
	7439-92-1	Lead	0.50	<u></u>	F
		Magnesium	10200		
	7439-96-5	Manganese	1300	-	P
	7439-97-6	Mercury_	0.20		z⊽
	7440-02-0	Nickel			P_
	7440-09-7	Potassium	6490		P
	7782-49-2	Selenium_	0.50	U A J	<u>-</u>
		Silver	8.1	ו בא ט	P_
		Sodium	28700	_  1	p_
	I .	Thallium_	0.70	UW 1	- - -
	7440-62-2	Vanadium_	4.2	נ ז	P_
	7440-66-6	Zinc	26.0	-   -   1	NR NR
		Cyanide	<u></u>	-  1	VR
olor Before:	COLORLESS	Clarit	ty Before: CLE	AR_	Texture:
lor After:	COLORLESS	Clarit	ty After: CLE	AR_ /	Artifacts:
omments:					

#### U.S. EPA - CLP

### 1 INORGANIC ANALYSES DATA SHEET

E	SAMPLE	NO.

ab Name: PACE_INCOR	PORATED	00039 Contract: EPC	v131 M5 FB
Lab Code:	Case No.:	SAS No.:	SDG No.:
<pre>latrix (soil/water):</pre>	WATER	Lab Sample	e ID: 3523.1
revel (low/med):	LOW	Date Rece	ived: 05/15/91
s Solids:	ů		,

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

			_		
CAS No.	Analyte	Concentration	С	Q	М
7429-90-5	Aluminum	195	บิ		P
7440-36-0	Antimony	0.80	U		F
7440-38-2	Arsenic	1.0	U	7	F
7440-39-3	Barium	12.5	y	R	P
7440-41-7	Beryllium	1.1	ַט		P
7440-43-9	Cadmium	0.10	B	-	F
7440-70-2	Calcium	448	ប		P
7440-47-3	Chromium	9.5	ט	5	p_
7440-48-4	Cobalt	6.4	ט		P_
7440-50-8	Copper	4.5	ប		P
7439-89-6	Iron	97.7	ט		P
7439-92-1	Lead	0.90	B		F
7439-95-4	Magnesium	509	บ		P_
7439-96-5	Manganese	1.5	ָ ט		P_
7439-97-6	Mercury	0.20	ַ		CV
7440-02-0	Nickel	8.6	U		P_
7440-09-7	Potassium	760_	U		P_
7782-49-2	Selenium	0.50	U.	5	F_
7440-22-4	Silver	8.1	U		P_
7440-23-5	Sodium	390_	ן ט		P_
7440-28-0	Thallium_	0.70	ַ		F_
7440-62-2	Vanadium_	4.2	U		P_
7440-66-6	Zinc	36.0			P_
	Cyanide_				NR
	l				Il

olor Befor	e: COLORLESS	Clarity Before:	CLEAR_	Texture:
olor After	: COLORLESS	Clarity After:	CLEAR_	Artifacts:
Comments:				

B. A.	SAMPLE	NO.

Lab Name: PACE	V140C5					
Lab Code:	Ca:	se No.:	SAS No.	<b>.</b>	SDG No.:	
Matrix (soil/w	ater): WATE	R	Lab Sample ID: 3524.0			
Level (low/med): LOW		_		Date Rec	eived: 05/15/91	
≩ Soliās:		ס	-			
Co	ncentration	Units (ug/	L or mg/kg dry	y weight)	: UG/L_	
	CAS No.	Analyte	Concentration	C Q	м	
	7429-90-5	Aluminum		-	NR	
	7440-36-0	Antimony_			NR	
		Arsenic			NR	
		Barium		_	NR	
		Beryllium		[ <b>-</b> ]	NR	
		CadmiumCalcium	' <del></del>		NR NR	
		Chromium_			NR	
		Cobalt			NR	
•		Copper			NR	
		Iron			NR	
		Lead			NR ·	
		Magnesium			NR	
		Manganese			NR	
		Mercury			NR	
	l .	Nickel		-	NR	
		Potassium			NR	
		Selenium_ Silver		-	NR NR	
		Sodium		-	NR	
	7440-28-0				NR	
		Vanadium		_	NR	
	7440-66-6	Zinc			NR	
		Cyanide	10_	<u>"</u>	AS	
					l <u> </u>	
Color Before:	COLORLESS	Clarit	cy Before: CLEA	AR_	Texture:	
Color After:	COLORLESS	Clarit	y After: CLEA	AR_	Artifacts:	
Comments:						

_		
E	SAMPLE	NO.

		INORGANIC A	l Analyses da	TA SHE	ET	ETT SAMP	LE NO.
ab Name: PACE	TNCORPORATI	FD	Contract	· FDC		1 v131	C5
ab Name. PACE	_INCORPORAL		Concract	brc_	*	1	
Lab Code:	Cas	se No.:	SAS	No.: _	<del></del>	SDG No.:	
atrix (soil/wa	ater): WATE	R		La	b Sampl	e ID: 352	5.8
revel (low/med)	): LOW_	_		Da	te Rece	ived: 05/	15/91
→ Solids:		υ			ı		
Cor	ncentration	Units (ug/	/L or mg/kg	dry w	eight):	UG/L_	
,	CAS No.	Analyte	Concentrat	ion C	Q	M	
	7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6 7440-02-0	Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium				NR NR NR NR NR NR NR NR NR NR NR NR NR N	
color Before:	COLORLESS		ty Before:		•	Texture:	<del></del>
olor After:	COLORLESS	Clarit	ty After:	CLEAR_	•	Artifacts	:
Comments:							

7/87

E	SAMPLE	NO.

		INORGANIC A	ANALYSES DATA S	SH	EET	,
					0004	12 V/31 C5 FB
ah Mamor DACE	TNCORPORAT	ED	Contract: El	PC	000	74 V/5/ C5 FB
ab Name. FACE			concrace. D	٠ ٠.		.
Lab Code:	Ca	se No.:	SAS No.	: .		SDG No.:
atrix (soil/w	ater): WATE	R		L	ab Samp	ole ID: 3527.4
Level (low/med	): LOW_	<b></b>		Da	ate Rec	eived: 05/15/91
. Soliūs:		Ū				
Co	ncentration	Units (ug,	/L or mg/kg dry	7 1	weight)	: UG/L_
	,	<del>,</del>	<del></del>	r		<del>,     </del> ,
	CAS No.	Analyte	Concentration	С	Q	м
		\		_		
	7429-90-5			_		NR
	7440-36-0	Antimony_			·	NR
	7440-38-2	Arsenic_		_		NR
		Barium		_	ļ	NR NR
		Beryllium		<b> </b>		NR
	7440-43-9			-		NR
	7440-70-2	Calcium_		<b> </b>	ļ	NR
	7440-47-3			_	l <del></del>	NR
	7440-48-4	Cobalt		_		NR
		Copper		_	<b> </b>	NR
	7439-89-6	Iron		_	ļ	NR
	· ·	Lead		_		NR ·
		Magnesium		_	ļ	NR
		Manganese		_		NR
		Mercury_		_	<b> </b>	NR
		Nickel		_		NR
		Potassium		_		NR
		Selenium_		_		NR
		Silver				NR
		Sodium		_		NR
		Thallium_		_		NR
		Vanadium_		_		NR
	7440-66-6	Zinc		_		NR
		Cyanide	10_	ប		AS
				_		.
	·			_		•

·lor	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
··lor	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
Omme	nts:						

### 1

EPA	SAMPLE	NO.

INORGANIC	ANALYSES	DATA	SHEET

Tab Name: PACE	: INCORPORAT	ED	Contract: EI	0004	3 V131M10
Lab Code:	_				SDG No.:
Matrix (soil/w	rater): WATE	R		Lab Samp	le ID: 3714.5
Level (low/med	): LOW_	<del>-</del>		Date Rec	eived: 05/19/91
i solids:		0	<i>(</i> -		**- /-
	CAS No.	Analyte	/L or mg/kg dry Concentration		M P217191
	7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-47-3 7440-48-4 7440-50-8 7439-96-5 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-23-5 7440-28-0 7440-66-6	Aluminum_ Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Calcium_ Chromium_ Cobalt_ Copper_ Iron_ Lead_ Magnesium Manganese Mercury_ Nickel_ Potassium Selenium_ Silver_ Sodium_ Thallium_ Vanadium_ Zinc_ Cyanide_	0.80 1.0 29.0 1.1 0.15 44200 9.5 6.4	U	P
Color Before:	COLORLESS		y Before: CLEA	_	Texture:
	COLORLESS	Clarit	ty After: CLEA	AR_	Artifacts:
Comments:					

SAMPLE	NO.

		INORGANIC	MINDISES DAIN	DUEET	
Lab Name: PACE	_incorporat	ED	( Contract: El	0044	V140M10
Lab Code:	Ca	se No.:	SAS No.		SDG No.:
fatrix (soil/w	water): WATE	R		Lab Samp	le ID: 3713.7
Level (low/med	l): LOW_	_		Date Rece	eived: 05/19/91
Solids:	<del></del>	ū			
Co	ncentration	Units (ug	/L or mg/kg dry	weight)	: UG/L_
	CAS No.	Analyte	Concentration	C Q	M P717191
	7420-00-5	Aluminum	195	<u></u>	<del>_</del>
	7429-90-5 7440-36-0	Antimony	0.80	ם – – –	P
	7440-38-2	Arsenic	1.0	B WN J	F_ F_
	7440-39-3	Barium	28.0	B W 3	P_
	7440-41-7	Beryllium	1.1	0	P_
	7440-43-9	Cadmium	I ————————————————————————————————————	B -	F-
		Calcium	44400		F_
	7440-70-2		9.5	U AS	P_ P_
	7440-47-3	Chromium_			P_
	7440-48-4	Cobalt	6.4	<u>U</u>	P_
	7440-50-8	Copper	10 229	B U	P
	7439-89-6	Iron		<u> </u>	F-
	7439-92-1 7439-95-4	Lead	0.50_ 9630	"	F_ P_
	7439-96-5	Magnesium	960	- 2	5-
	7439-97-6	Manganese Mercury	0.20	<u></u>	P CV
	7440-02-0	Nickel	8.6	บี	P_
	7440-02-0	Potassium	7030	•	P
	7782-49-2	Selenium	0.50	ַ	
	7440-22-4	Silver	8.1	ZW D	F_ P_
	7440-23-5	Sodium	28600	·   - "-3-	P
	7440-28-0	Thallium	0.70	Ū W	F
	7440-62-2	Vanadium		<u>"-</u> "	P
	7440-66-6	Zinc	23.0	1-1-	P P
	/440-00-0	Cyanide		-	NR
olor Before:	COLORLESS	Clari	ty Before: CLEA	LR_	Texture:
olor After:	COLORLESS	Clari	ty After: CLEA	AR_	Artifacts:
Comments:					
		<u></u>			

### U.S. EPA - CLP

#### I INORGANIC ANALYSES DATA SHEET

III A	SAMPLE	NO.

		INORGANIC A	ANALYSES DATA S	SHEET	,
Lab Name: PACI	E_INCORPORAT	ED	Contract: EI	00045	√140 M10 FB
					SDG No.:
Matrix (soil/v	water): WATE	R		Lab Samp	le ID: 3716.1
Level (low/med	i): LOW_	_		Date Rec	eived: 05/19/91
* Solias:		0			
Co	oncentration	Units (ug/	/L or mg/kg dry	weight)	: UG/L_
	CAS No.	Analyte	Concentration	C Q	м
	7429-90-5	Aluminum	195	ʊ	P_
	7440-36-0	Antimony_	0.80		F-
	7440-38-2	Arsenic		U	F
	7440-39-3	Barium	12.5	UR	P_
	7440-41-7	Beryllium		ַ <u></u>	F_ P_
	7440-43-9	Cadmium		<u> </u>	F_
	7440-70-2	Calcium_		ַ ע	P_
	7440-47-3	Chromium_	9.5	0 5	P
	7440-48-4	Cobalt	6.4_	ַ ע	P_ P_ P_ F_
	7440-50-8	Copper	6.0	B	P_
	7439-89-6	Iron	97.7	ט	P_
	7439-92-1	Lead	0.50	B	[F_] ·
	7439-95-4	Magnesium		ט	{ P}}
	7439-96-5	Manganese		ַ <u></u>	P_
	7439-97-6	Mercury		ט	c <del>v</del>
	7440-02-0	Nickel	8.6	ט	P_
	7440-09-7	Potassium	760_	ַ ע	P_ P_
	7782-49-2	Selenium_	0.50	บ	F_
	7440-22-4		8.1	UJ	P_
	7440-23-5	Sodium		B	ו סו
	7440-28-0		0.70	U	F_ P_
	7440-62-2	Vanadium_	4.2_	ען	P_
	7440-66-6	Zinc	18.0_	-8	P_ NR
		Cyanide_			NR
		l			
Color Before:	COLORLESS	Clari	ty Before: CLE	AR_	Texture:
Color After:	COLORLESS	Clarit	ty After: CLEA	AR_	Artifacts:
Comments:					
<del></del>			<del> </del>		

#### 1 INODGANIC ANALYSES DATA SHFF

Exam	SAMPLE	NO.

		INORGANIC A	Analyses data :	SHE	EET	
Lab Name: PACE	_INCORPORAT	ED	Contract: El	PC_	0046	V140C10
Lab Code:	Ca	se No.:	SAS No.	: _	<del></del>	SDG No.:
Matrix (soil/w	ater): WATE	R		La	b Samp	le ID: 3701.3
Level (low/med	): LOW_	-		Da	te Rec	eived: 05/19/91
. Solids:		0				
Co	ncentration	Units (ug	/L or mg/kg dry	y w	eight)	: UG/L_
	CAS No.	Analyte	Concentration	С	Q	м
	7429-90-5	Aluminum		-		NR
		Antimony				NR
		Arsenic_				NR
	7440-39-3	Barium				NR
	7440-41-7			1=1		NR
	7440-43-9	Cadmium_				NR
	7440-70-2	Calcium_				NR
	7440-47-3	Chromium		1=1		NR
	7440-48-4	Cobalt				NR
	7440-50-8	Copper				NR
	7439-89-6	Iron				NR
	7439-92-1	Lead				NR -
	7439-95-4	Magnesium		[_]		NR
	7439-96-5	Manganese				NR
	7439-97-6	Mercury_				NR
	7440-02-0	Nickel				NR
	7440-09-7	Potassium				NR
		Selenium_				NR
		Silver				NR
	7440-23-5	Sodium		_		NR
	7440-28-0	Thallium_				NR
	7440-62-2	Vanadium_				NR
	7440-66-6	Zinc				NR
		Cyanide	10	Ū		AS
olor Before:	COLORLESS	Clari	ty Before: CLE	AR_		Texture:
olor After:	COLORLESS	Clarit	ty After: CLE	AR_		Artifacts:
Comments:						

È. A	SAMPLE	NO.

		71101/017170		···	,—	<del></del>
ab Name: I	PACE_INCORPORA	TED	Contract: E	PC00	0 4 7	V131C10
ab Code: _	c	ase No.:	SAS No.	:	SD	G No.:
trix (soi	il/water): WAT	ER		Lab S	ample I	D: 3702.1
evel (low/	med): LOW	<del></del>		Date	Receive	d: 05/19/91
Soliās:		_0				
	Concentratio	n Units (ug	/L or mg/kg dry	y weig	ht): UG	/L_
	CAS No.	Analyte	Concentration	c Q	M	
	7429-90-5	Aluminum		-		
	1				NR	
	7440-36-0	- <del>-</del> -		-		
	7440-38-2			-	NR	
	7440-39-3			-	NR	
	7440-41-7			-	NR	
		Cadmium			NR	
	7440-70-2			-	NR	
	7440-47-3	· · · · · · · · · · · · · · · · · · ·	<u> </u>		NR NR	
	7440-48-4				NR NR	
	7440-50-8	Copper			NR	
	7439-89-6	Iron			NR	
	7439-92-1	Lead		_	NR NR	•
	7439-95-4	Magnesium			NR	
	7439-96-5	Manganese			NR	
	7439-97-6	Mercury			NR NR	
	7440-02-0	Nickel			NR	
	7440-09-7	Potassium			NR	
	7782-49-2	Selenium			NR NR	
	7440-22-4	Silver			NR	
	7440-23-5				NR	
	7440-28-0			-	NR	
	7440-62-2				NR	
	7440-66-6	· -		_	NR NR	
	' ' ' ' ' '	Cyanide_	10	<u> </u>	AS	
lor Befor	re: COLORLESS	Clari	ty Before: CLE	AR_	Tex	ture:
lor After	coLorless	Clari	ty After: CLEA	AR_	Art	ifacts:
mments:						
	····	<del></del>	····			<del></del>

ELA	SAMPLE	NO.

NR

NR

NR

NR NR

NR

NR NR

NR

AS

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Lab Name: PACE	_INCORPORAT	ED	Contract: El	0004	8 V131 C10 FB
Lab Code:	Ca	se No.:	SAS No.	:	SDG No.:
Matrix (soil/w	ater): WATE	R		Lab Samp	ole ID: 3704.8
Level (low/med	i): LOW_	-		Date Rec	ceived: 05/19/91
i Solids:	•	υ	<u></u> -	-	
Co	ncentration	Units (ug,	/L or mg/kg dry	y weight)	: UG/L_
		τ	T T		<del>T-</del> 1
	CAS No.	Analyte	Concentration	C Q	M
	7429-90-5	Aluminum		-	- NR
	7440-36-0	Antimony		-	NR
		Arsenic_	Ì		NR
		Barium		-	NR
		Beryllium		-	NR
		Cadmium		-	NR
	5	Calcium			NR
		Chromium			NR
	7440-48-4	Cobalt			NR
	7440-50-8	Copper			NR
	7439-89-6	Iron			NR
	7439-92-1	Lead			NR ·
	7439-95-4	Magnesium			NR
	7439-96-5	Manganese			NR

olor Before: COLORLESS Clarity Before: CLEAR\_ Texture: \_\_\_\_\_
Color After: COLORLESS Clarity After: CLEAR\_ Artifacts: \_\_\_\_

Comments: \_\_\_\_\_

Mercury\_

Nickel

Silver

Sodium

Zinc

Potassium

Selenium\_

Thallium

Vanadium

Cyanide

7439-97-6

7440-02-0

7440-09-7

7782-49-2

7440-22-4

7440-23-5

7440-28-0

7440-62-2

7440-66-6

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#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/14/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

Tetrachloroethene was the only compound detected in Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

As noted on the chain of custody, the temperature of the Grace samples was not taken. UniFirst samples were 18 $^{\rm O}$  C when received in the laboratory. Temperatures outside the  $^{\rm O}$ C  $^{\rm +2}$ C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Eight treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 14, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. V131V5FS was used for the field duplicate, matrix spike, and matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-17	3497	05/14/91
S1-17TB	3498	05/14/91
S1-17FB	3499	05/14/91
S4-15	3503	05/14/91
V131V5FS	3509	05/14/91
V131V5TB	3510	05/14/91
V154V5FS	3512	05/14/91
V197V5FS	3511	05/14/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All sample analysis met holding times.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met with the exception of 2-butanone which had an average RRF of 0.030 and %RSD of 39.8. Detection limits for 2-butanone were rejected in all samples.

#### B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/20	1:47	2-butanone Bromomethane Methylene Chl Benzene	0.032 (0.1) oride	32.9 (25) 26.5 (25) 26.7 (25)
5/20	14:24	2-Butanone Bromoform	0.024 (0.1)	28.3 (25) 29.1 (25)
5/21	7:54	2-Butanone	0.014 (0.1)	56.1 (25)

#### () Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.



#### IV. Blanks

Acetone was detected in V131V5TB at 2 ppb.

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

#### VII. Field Duplicates

Vinyl chloride was detected in the sample at 440 ppb, the field duplicate at 400 ppb, in the MS at 510 ppb, and in the MSD at 480 ppb (%RSD 10). Total 1,2-dichloroethene was detected in the sample at 1200 ppb, the field duplicate at 1000 ppb, in the MS at 1000 ppb, and in the MSD at 990 ppb (%RSD 9.7). Trichloroethene was detected in the sample at 440 ppb and in the field duplicate at 400 ppb. The data were acceptable.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

Target compounds were properly identified.

#### X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were detected.



#### XII. System Performance

System performance requires attention. Manual integrations should be addressed. Respons factor criteria should be monitored by the laboratory.

#### XIII. Overall Assessment of Data for a Case

All 2-butanone detection limits were rejected because of the low RF.

Contract: Lao Name: FACE

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 2497.9

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2990

Level: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. Date Analyzed: 5/20/91

Column: (pach/cap) PACk Dilution Factor: 20.00

#### CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/)	(ug/L or ug/kg) UG/L		α	
74-87-3	Chloromethane	200.	: U		
74-83-9	Bromomethane	200.	ΙU		
75-01-4	Vinyl Chloride	200.	١U		
75-00-3	Chloroethane	200.	! L		
75-09-2	Methylene Chloride	100.	ŀυ		
67 <b>-</b> 64 - 1	Acetone	200.	: U		
75-15-0	Carbon Disultide;	100.	; U		
75-35-4	1.1-Dichloroethene	100.	: U		
75-34-3	1,1-Dichloroethane:	100.	: U		
540-59-0	1.2-Dichloroethene (total)}	100.	: ບ		
67 <b>-</b> 66-3	Chloroform	100.	: ប		
107-06-2	1.2-Dichloroethane:	100.	_		
78-93-3	2-Butanone	سيبهيش	HP.		
71-55-6	1,1,1-Trichloroethane :	100.	¦U ´		
56-23-5	Carbon Tetrachloride	100.	١U		
108-05-4	Vinyl Acetate	200.	١U		
フラーニフーチャーー	Bromodichloromethane :	100.	ŀU		
78 -87 -5 <b>-</b>	1,2-Dichloropropane	100.	l U		
10061-01-5	cis-1.3-Dichloropropene :	100.	! U	;	
79-01-6	Trichloroethene	100.	¦ U	1	
124-48-1	Dibromochloromethane	100.	; U	;	
79-00-5	1.1.2-Trichloroethane	100.	: U	;	
71-43-2	Benzene	100.	!U	!	
10061-02-6	Trans-1.3-Dichloropropene	100.	: U	;	
75-25-2	Bromoform:	100.	:U	:	
108-10-1	4-Methyl-I-Pentanone :	200.	: U	;	
591 <i>-7</i> 8 <i>-</i> 6	2-Hexanone	200.	ιu	- 1	
127-18-4	Tetrachloroethene	2100.	1	;	
79-34-5	1,1,2,2-Tetrachloroethane	100.	: U	;	
108-88-3	Toluene	100.	:U	;	
108-90-7	Chlorobenzene	100.	:U	:	
100-41-4	Ethylbenzene	100.	١U	;	
100-42-5	Styrene	100.	¦υ	;	
1330-30-7	Xylene(total)	100.	ΙU.	1	
1000 20 /	Ayrene vouver	• • • •	!		

#### ADELLITE OKCHNICO MAMELOTO NATH OLEET TENTATIVELY IDENTIFIED COMPOUNDS

Contract: .

Lab Name: PACE

SDG No.: 00022

Matrix: (Soil/water) WATER Lab Sample ID: 3497.9

Sample wt/vol: 5. (g/mL) ML Lab File ID: 62990

Level: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. Date Analyzed: 5/20/91

Column: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

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CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	: 0 :
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: S1-17FB

Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3499.5

Sample wt/vol: 5. (g/mL) ML Lab File ID: GD991

\_evel: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. Date Analyzed: 5/20/91

Column: (pack/cap) PACk Dilution Factor: 1.00

#### CONCENTRATION UNITS:

	COMPOUND (ug/L or	nā∖⊧ā≀ NG\r	D
1		}	
1 74-87-3	Chloromethane	1 10.	: 0
1 74-83-9	Bromomethane	: 10.	:υ :
1 75-01-4	Vinyl Chloride	1 10.	: U
	Chloroethane		:U :
	Methylene Chloride		: U :
1 67-64-1	Acetone	; 10.	:U :
1 75-15-0	Carbon Disulfide	; 5.	: U :
1 75-35-4	1.1-Dichloroethene	; 5.	: U
1 75-34-3	1.1-Dichloroethane	: 5.	: U
	1.2-Dichloroethene (total)		161
1 67-66-3	Chloroform	: 5.	: U :
107-06-2	1.2-Dichloroethane	; 5.	ווי און
1 78-93-3	2-Butanone	1	HOP :
: 71-55-6	1,1,1-Trichlorgethane	: 5.	: U :
	Carbon Tetrachloride		iu :
108-05-4	Vinyl Acetate	10.	:U :
1 75-27-4	Bromodichloromethane	: 5.	; U ;
1 78-87-5	1,2-Dichloropropane	: 5.	: U :
(10061-01-5	cis-1.3-Dichloropropene	: 5.	: 0 :
79-01-6	Trichloroethene	: 5.	; U ;
124-48-1	Dibromochloromethane	: 5.	: U :
79-00-5	1,1,2-Trichloroethane	: 5.	: U :
1 71-43-2	Benzene	; 5.	:U :
10061-02-6	Trans-1,3-Dichloropropene	; 5.	: U :
75-25-2	Bromoform	i 5.	: 0
108-10-1	4-Methyl-2-Pentanone	10.	: U :
	2-Hexanone		: U :
127-18-4	Tetrachloroethene	<u> </u>	: U :
	1.1.2.2-Tetrachloroethane		: U :
	Toluene		: U :
108-90-7	Chlorobenzene	~~; 5.	:U :
100-41-4	Ethylbenzene	··· 5.	:ប :
100-42-5	Styrene	- 5.	: :
1330-20-7	Xylene(total)	; <u>5.</u>	:U :
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#### ACCULTURE CHRONICO WINNETO DO DATA OUEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

J1 -17F⊞

SDG No.:

00028

Matrix: (soil/water) WATER

Lab Sample ID: 3499.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2991

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACk

Number TICs found: 0

Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

COMPOUND NAME	; RT	: EST. CONC.	: : 0
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FORM I VOA-TIC

1/87 Rev.

EFM DMIIFLE 40.

: S1-17TB

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00032

Matrix: (SOil/water) WATER Lab Sample ID: 3498.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: 62978

Level: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. Date Analyzed: 5/20/91

Column: (pac)/cap) PACk Dilution Factor: 1.00

#### CONCENTRATION UNITS:

CAS NO.	COMPOUND	(mg/L or			Ω	
,'		··	<u>-</u>		;	:
1 74-87-3	Chloromethane _		!	10.		;
1 74-83-9	Bromomethane		:	10.		;
1 75-01-4	Vinyl Chloride_		!	10.		;
1 75-00-3	Chloroethane			10.		;
1 75-09-2	Methylene Chlor:	rde	;	5.	! U	;
67-64-1	Acetone		!	10.	: U	;
; 75-15-0	Carbon Disulfide		;	5.	; U	;
1 75-35-4	1,1-Dichloroethe	ene		5.	: U	;
1 75-34-3	1,1-Dichloroetha	ane	;	5.	: U	;
1 540-59-0	1.2-Dichloroethe	ene (total)	;	5.	١U	;
: 67-66-3	Chloroform			5.	; U	;
107-06-2	1.2-Dichloroetha	ane	;	5.	١٠ _	- 1
1 78-93-3	2-Butanone		;	ببير	JU R	- ¦
1 71-55-6	1.1,1-Trichloroe	thane	;	5.	ΙU	;
1 56-23-5	Carbon Tetrachlo	ride	1	5.	: U	;
1 108-05-4	Vinyl Acetate			10.	١U	;
75-27-4	Bromodichloromet	hane	:	5.	١U	;
1 78-87-5	1,2-Dichloroprop	ane	;	5.	: U	;
110061-01-5	cis-1.3-Dichlord	propene	;	5.	١U	-
79-01-6	Trichloroethene		:	5.	: U	
124-48-1	Dibromochloromet	hane	;	5.	١U	;
79-00-5	1.1.2-Trichloroe	thane	:	5.	ŀυ	;
1 71-43-2	Benzene		:	5.	١U	;
110061-02-6	Trans-1.3-Dichlo	ropropene	:	5.	:U	;
1 75-25-2	Bromoform		;	5.	:U	ł
108-10-1	4-Methyl-2-Penta	none	;	10.	:U	!
: 591-78-6	2-Hexanone		;	10.	;U	;
127-18-4	Tetrachloroethen	е	;	5.	١U	1
79-34-5	1,1,2,2-Tetrachl	oroethane	!	5.	:U	:
108-88-3	Toluene	•	!	5.	:U	;
108-90-7	Chlorobenzene		;	5.	:U	1
100-41-4	Ethylbenzene		;	5.	:U	;
100-42-5	Styrene		;	5.	: U	;
1330-20-7	Xylene(total)		:	5.	;U	:
	77 L L 17 L 1 U L 1 L L L L L L L L L L L L L L L		;		†	;
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### TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

00033

Matrix: (soil/water) WATER

Lab Sample ID: 3498.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2978

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: 'pack/cap' PACk

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

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FORM I VOA-TIC

1/87 Rev.

#### VOLATILE OFFANICS ANALYSIS DATA SHEET

'ab Name: PACE Contract:

54-15

SDG No.:

00037

.evel: (low/med) LOW Date Received: 5/15/91

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63004

% Moisture: not dec.100. Date Analyzed: 5/21/91

Column: 'pack/cap' PACk Dilution Factor: 10.00

CONCENTRATION	UNITS:
---------------	--------

56-23-5Carbon Tetrachloride	
74-83-9Bromomethane	
75-01-4Vinyl Chloride	
75-00-3Chloroethane	
75-09-2Methylene Chloride	<b>!</b>
67-64-1Acetone       100. IU         75-15-0Carbon Disulfide       50. IU         75-35-41.1-Dichloroethene       50. IU         75-34-31.1-Dichloroethane       50. IU         540-59-01.2-Dichloroethane       50. IU         67-66-3Chloroform       50. IU         107-06-21.2-Dichloroethane       50. IU         78-93-32-Butanone       50. IU         71-55-61.1.1-Trichloroethane       50. IU         108-05-4Vinyl Acetate       100. IU         75-27-4Bromodichloromethane       50. IU         78-87-51,2-Dichloropropane       50. IU         10061-01-51,3-Dichloropropane       50. IU         124-48-1Dibromochloromethane       50. IU         79-00-51,1,2-Trichloroethane       50. IU	
75-15-0Carbon Disulfide	
75-15-0Carbon Disulfide	
75-34-31.1-Dichloroethane	
540-59-01.2-Dichloroethene (total)	!
67-66-3Chloroform	
107-06-21.2-Dichloroethane	
107-06-21.2-Dichloroethane	
71-55-61.1.1-Trichloroethane	
71-55-61.1.1-Trichloroethane 50.8   \$0   \$0.5	
108-05-4Vinyl Acetate	6121191
75-27-4Bromodichloromethane	
75-27-4Bromodichloromethane	
10061-01-5cis-1,3-Dichloropropene	
10061-01-5cis-1,3-Dichloropropene	
124-48-1Dibromochloromethane	
124-48-1Dibromochloromethane	6/2/191
79-00-5	<b>.</b>
1 71 - 10 0 Page 101 1	
10061-02-6Trans-1,3-Dichloropropene	
75-25-2Bromoform   50.  U	
: 108-10-1	
591-78-6	
127-18-4Tetrachloroethene	
79-34-51,1,2,2-Tetrachloroethane   50.  U	
108-88-3Toluene 50. (U	
108-90-7Chlorobenzene	
100-41-4Ethylbenzene 50.  U	
100-42-5Styrene 50. (U	
1330-20-7Xylene(total) 50. (U	

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

SDG No.:

00038

1\_\_\_\_\_

Matrix: (Soil/water) WATER

Lab Sample ID: 3503.7

Sample wt/vol: 5. (q/mL) ML Lab File ID: 63004

evel: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Glumn: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: .

Number TICs found: 0 (ug/L or ug/kg) UG/L

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FORM I VOA-TIC

1/87 Rev.

## VOLATILE ORGANICS ANALYSIS DATA SHEET

V131V5FS

Lab Name: PACE Contract:

00119

Matrix: (soil/water) WATER Lab Sample ID: 3509.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2993

\_evel: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100.
Date Analyzed: 5/20/91

Column: (pack/cap) PACk Dilution Factor: 10.00

#### CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug	i/kg> UG/L	C	}
!	~			<del></del>	
1 74-87-3	Chloromethane	*	100.	: U	1
1 74-83-9	Bromomethane_		100.	; U	;
75-01-4	Vinvl Chloride		570.	:	:
75-00-3	Chloroethane_	~~	100.	١U	;
1 75-09-2	Methylene Chl	oride	50.	: U	;
67-64-1	Acetone		100.	:U	;
1 75-15-0	Carbon Disulf:	ide	50.	: U	:
75-35-4	1,1-Dichloroe	thene	50.	l U	;
	1.1-Dichloroet			: U	:
1 540-59-0	1,2-Dichloroet	thene (total)	1200.	;	;
1 67-66-3	Chloroform		50.	١U	;
1 107-06-2	1.2-Dichloroet	thane	50.	١٠ ؍	:
1 78-93-3	2-Butanone		المنبل ا	HP	- ;
; 71-55-6	1,1,1-Trichlor	roethane	50.	ΙU	;
56-29-5	Carbon Tetract	loride	50.	:υ	:
108-05-4	Vinyl Acetate		100.	; U	;
75-27-4	Bromodichlorom	nethane	50.	: U	:
: 78-87-5	1,2-Dichloropr	opane	50.	; U	;
110061-01-5	cis-1.3-Dichlo	propropene	50.	:U	:
79-01-6	Trichlaraether	ne	440.	:	;
124-48-1	Dibromochlorom	nethane	50.	ŀυ	1
1 79-00-5	1,1,2-Trichlor	oethane	50.	ŀυ	;
1 71-43-2	_ ' '		50.	١U	;
110061-02-6	Trans-1,3-Dich	loropropene	50.	:U	:
75-25-2			50.	: U	;
108-10-1	4-Methyl-2-Pen	tanone	100.	:U	;
591-78-6	2-Hexanone		100.	:υ	;
127-18-4	Tetrachloroeth	ene	50.	: U	;
79-34-5	1,1,2.2-Tetrac	hloroethane :	50.	: U	;
108-88-3	Toluene		50.	:ប	;
108-90-7	Chlorobenzene		50.	: U	;
100-41-4	Ethylbenzene		50.	ŧÚ	:
100-42-5	Styrene		50.	٠Ú	:
1330-20-7	Xylene(total)		50.	:U	;
	77, 22, 72, 72, 73, 74, 75		<del>-</del> · ·	!	:

#### ANTHITTE AKRANICA MMMETOTO NATH DUEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: . 131V5FS

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3500.520

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 62993

evel: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/20/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

: CAS NUMBER	COMPOUND NAME	 ! ! RT	: EST. CONC.	: : α :
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FORM I VOA-TIC

1/87 Rev.

### VOLATILE ORGANICS ANALYSIS DATA SHEET

Contract: Lab Name: PACE

00127 Lab Sample ID: 2509.6 Matrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3012

\_evel: (low/med) LDW Date Received: 5/15/91

Date Analyzed: 5/21/91 " Moisture: not dec.100.

Dilution Factor: 10.00 Column: (pack/cap) PACK

#### CONCENTRATION UNITS:

CAS NO.	COMPOUND	Oug/L or	տō\⊧ō› ¦	NB/L	C	)
!			<u> </u>			;
1 74-87-3	Chloromethane		!	100.	: U	1
1 74-83-9	Bromomethane		;	100.	: υ	_ ;
75-01-4	Vinvl Chloride		!	520.	;	;
75-00-3	Chloroethane		1	100.	: U	;
1 75-09-2	Methylene Chlo	.rqe	;	50.	: U	;
1 67-64-1	Acetone		;	100.	; 🗆	;
: 75-15-0	Carbon Disulfi	de	!	50.	١U	ł
	1.1-Dichloroet			50.	; U	ŀ
	1,1-Dichloroet			50.	: U	1
	1.2-Dichloroet			1000.	;	}
: 67-66-3	Chloroform		;	50.	; U	;
1 107-06-2	1,2-Dichloroet	hane	;	50.	ا ا	, ;
1 78-93-3	2-Butanone		;	That.	HU P	- ;
1 71-55-6	1.1.1-Trichlor	oethane	!	50.	١U	i
: 56-23-5 <b>-</b>	Carbon Tetrach	loride	;	50.	ŀυ	;
108-05-4	Vinyl Acetate .		;	100.	ŀυ	;
1 75-27-4	Bromodichlorome	ethane	:	50.	ιυ	1
1 78-87-5	1,2-Dichloropre	opane		50.	U	1
10061-01-5	cis-1.3-Dichlo	ropropene	!	50.	; U	;
79-01-6	Trichloroethen	·	;	400.		1
124-48-1	Dibromochlorome	ethane	;	50.	١U	
1 79-00-5	1,1,2-Trichlore	ethane	;	50.	:U	;
1 71-43-2	Benzene		!	50.	ŧυ	;
:10061-02-6	Trans-1,3-Dichl	loropropene j	;	50.	ŀυ	;
75-25-2	Bromoform		;	50.	: U	1
108-10-1	4-Methyl-2-Pent	anone	;	100.	:U	;
591-78-6	2-Hexanone		!	100.	:U	;
127-18-4	Tetrachloroethe	ne		50.	: U	;
	1.1.2.2-Tetract			50.	; U	- 1
108-88-3	Toluene		!	50.	:U	;
108-90-7	Chlorobensene		;	50.	: U	;
100-41-4	Ethylbenzene		;	50.	:U	;
100-42-5	Styrene		:	50.	: U	:
1330-20-7	Xylene(total) _		;	50.	: U	;
			!		-	;

#### TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

Matrix: (soil/water) WATER . Lab Sample ID: 3509.6

pample wt/vol: 5. (g/mL) ML Lab File ID: 63012

evel: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. Date Analyzed: 5/21/91

olumn: (pach/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	30111 30112 111112	: RT	EST. CONC.	. O :
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FORM I VOA-TIC

1/87 Rev.

00128

# VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract: V131V5TB

Matrix: (S011/water) WATER Lab Sample ID: 3510.00135

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2996

\_evel: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100.
Date Analyzed: 5/21/91

Column: (pack/cap) PACk Dilution Factor: 1.00

#### CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or	ug/kg)	UG/L	Ω	
!			;	<del>-</del>		!
1 74-87-3	Chloromethane		!	10.	! U	;
1 74-83-9	Bromomethane	. <b></b>	!	10.	i U	i
75-01-4	Vinyl Chloride		!	10.	! U	
1 75-00-3	Chloroethane		;	10.	! U	
1 75-09-2	Methylene Chlori	.de		5.	10_	- 1
67-64-1	Acetone Carbon Disulfide		!	æ.	1 1	
1 75-15-0	Carbon Disulfide	·	¦	5.	; U	;
1 75-35-4	1,1-Dichloroethe	ne	;	5.	; U	;
1 75-34-3	1,1-Dichloroetha	ne	;	5.	¦ U	;
1 540-59-0	1,2-Dichloroethe	ne (total)	:	5.	¦ (J	;
: 67-66-3	Chloroform		;	5.	ŧυ	:
1 107-06-2	1,2-Dichloroetha	ne	;	5.	١U	;
1 78-93-3	2-Butanone		1	بينيا.	HR	;
: 71-55-6	1.1.1-Trichloroe	thane	;	5.	ΙU	;
: 56-23-5	Carbon Tetrachlo	ride		5.	; U	:
108-05-4	Vinyl Acetate		!	10.	:U	;
: 75-27-4	Bromodichloromet	hane	:	5.	: U	;
: 78-87-5 <b></b> -	1,2-Dichloroprop	ane	!	5.	ŀU	;
110061-01-5	cis-1,3-Dichloro	propene	<b>:</b>	5.	: U	;
79-01-6	Trichloroethene		;	5.	١U	;
124-48-1	Dibromochloromet	hane	!	5.	: U	;
79-00-5	1,1,2-Trichloroe	thane	;	5.	١U	:
71-43-2	Benzene		!	5.	: U	;
10061-02-6	Trans-1,3-Dichlo	ropropene	;	5.	: U	1
75-25-2	Bromoform		;	5.	; Ū	;
108-10-1	4-Methyl-I-Penta	none	:	10.	: U	:
591-78-6	2-Hexanone		;	10.	i U	- 1
127-18-4	Tetrachloroethen			5.	Ü	:
79-34-5	1,1,2,2-Tetrachl		;	5.	: U	1
108-88-3	Toluene		;	5.	: U	
108-90-7	Chlorobenzene		;	5.	: U	
100-11-1	Ethylbenzene		;	5.	: U	1
100-40-5	Styrene			5. 5.	: U	•
100-42-0	Xylene(total)		;	5.	: U	:
1330-10-/	xylene(total/		'	J.	, 0	

# TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

Matrix: (soil/water) WATER

Lab Sample ID: 3510.000136

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2996

\_evel: (low/med) LOW

Date Received: 5/15/91

Date Analyzed: 5/21/91

Column: (pack/cap) PACk

% Moisture: not dec.100.

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	1 11	: EST. CONC.	
1			·	;;
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4			·	' ' 
5				!!
7.			 	!
8:				
9 10				
11				
12				!
14;				
15				:
17.				;
18		!		!
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71		;		!
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01S4V5FS

Lib Name: PACE Lab Code: PACE Case No.: EPC SAS No.: 00141 Sample ID: 3512.5 SDG No.:

Contract:

Matrix: (SOll/water) WATER

בשם

\_evel: (low/med) LOW

% Moisture: not dec.100.

Column: (pact/cap) PACt

CAS NO.

COMPOUND

CONCENTRATION UNITS:

 $\Box$ 

בח (Q/mL) ML

Sample

wt/vol:

Lab File ID: 62998

Date Received: 5/15/91

Date Analyzed: 5/21/91

Dilution Factor: 5.00

	1330-20-7	١.	100-41-4Ethylbenzene	-90-7Chlorober	-3Toluene	-34-		) ne	108-10-1	-15-1Bromoform	10061-02-6Trans-1.3-Dichloropropene	-43-2Benzene	79-00-51,1.2-Trichloroethane	-48-1Dibromoch	-01-6Trichloroethene	-01-5c1s-1,3-D	1	-27-4Bromodichloromethan	8-05-4Vinyl Acetate	56-23-5Carbon Tetrachloride	-55-61,1,1-Trichloroeth	-3Butanone	Ť	-66-3Chloroform	540-59-01.2-Dichloroethene (total)	4-31.1-Dichloroethane	-41, 1-D1chl	75-15-0Carbon Disulfide	1	75-09-2Methylene Chloride	-00-3Chloroethane	75-01-4Vinyl Chloride	3-9Bromom	74-87-3Chloromethane	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		יין נ טיי																	, co				•											100.	

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TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

SDG No.:

Matrix: (Soil/water) WATER

Lab Sample ID: 3510:05142

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G2998

Level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACk

Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	. ,,,	: EST. CONC.	; Q ;
1.			!	
1	ı ı	1		, ,
3				!!
			1	: ;
			'	'
7			1	
8;				!
9				
11.				¦;
12				
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4 <del>C</del>				
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: 17:				
' 18;		;		
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		,		
23	•			
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25. 26.		,		!
27		;		;
28				;
29				!
30			i	;
i-		'	'	'

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V197V5FS

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

1atrix: (soil/water) WATER Lab Sample ID: 3511.8

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2997

Level: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100.
Date Analyzed: 5/21/91

Column: (pack/cap) PACk Dilution Factor: 10.00

#### CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/	/kg> UG/L	C	)
!				:	;
1 74-87-3	Chloromethane	;	100.	١U	;
1 74-83-9	Bromomethane	/	100.	:U	;
75-01-4	Vinyl Chloride	!	1300.	;	;
75-00-3	Chloroethane	!	100.	: U	;
75-09-2	Methylene Chlorid	e:	50.	١U	;
67-64-1	Acetone		100.	: U	;
; 75-15-0	Carbon Disulfide_	;	50.	١U	:
; 75-35 <b>-</b> 4	1.1-Dichloroether	e:	50.	١U	;
: 75-34-3	1,1-Dichloroethan	e:	50.	:U	!
540-59-0	1.2-Dichloroether	e (total):	1600.	1	;
: 67 <i>-</i> 66 <i>-</i> 3	Chloroform	:	50.	: U	;
107-06-2	1.2-Dichloroethan	e:	50.	١٠ ۾	;
: 78-93 <b>-</b> 3	2-Rutanone	;	100.	WR	- :
71-55-6	1.1.1-Trichloroet	hane:	50.	١U	;
56-23-5	Carbon Tetrachlor	ide:	50.	: U	-
108-05-4	Vinyl Acetate		100.	١U	1
75-27-4	Bromodichlorometh	ane:	50.	١U	;
78-87-5	1,2-Dichloropropa	ne!	50.	ΙU	:
:10061-01-5	cis-1.3-Dichlorop	ropene :	50.	ΙU	;
79-01-6	Trichloroethene _	;	87.	1	1
124-48-1	Dibromochlorometh	ane:	50.	١U	:
79-00-5	1.1.2-Trichloroet	hane	50.	:U	;
71-43-2	Benzene		50.	; U	;
10061-02-6	Trans-1.3-Dichlor	opropene :	50.	ΙU	†
75-25-2	Bromoform		50.	; U	;
108-10-1	4-Methyl-I-Pentan	one :	100.	:U	;
591-78-6	2-Hexanone		100.	١U	1
127-18-4	Tetrachloroethene		50.	١U	;
79-34-5	1,1,2,2-Tetrachlo	roethane :	50.	ŧυ	;
108-88-3	Toluene	,	50.	; U	;
108-90-7	Chlorobenzene		50.	ΙU	1
100-41-4	Ethylbenzene		50.	10	
100-47-5	Styrene	:		: U	:
1330-20-7	Xylene(total)	:	50.	: U	i
1000 20 /			J.,	!	
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#### TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: .

Matrix: (Soil/water) WATER Lab Sample ID: 3510 081 49

Sample wt/vol: 5. (g/mL) ML Lab File ID: G2997

Level: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. Date Analyzed: 5/21/91

Column: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

		<del></del>		
CAS NUMBER	COMPOUND NAME	: RT	; : EST. CONC. !=======	α !
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4				;;
5		!		! !
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_		!!		!!
9		!!		<u>;</u>
10		¦		<u> </u>
11		¦		;
12		' <u>'</u>		::
				'
15		'		
16;				
1/•i		:		!
18;				!
19		!	!	!
20		!		
22		;		
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27	<b>\</b>		;	
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20		!		:
		;	!	;

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#### DATA VALIDATION REPORT.

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/14/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

All positive results and detection limits, except for Samples V140V5FB and S6-17MSD were qualified as estimated for this sample delivery group because peaks were manually integrated for most of the compounds in the standards. Documentation from the laboratory has been requested. When that documentation is received, this data package will be re-evaluated.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was not recorded; cooler temperature for the UniFirst samples was  $18^{\circ}$ C. Temperatures outside the  $4^{\circ}$ C  $\pm 2^{\circ}$ C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Five samples were collected and submitted to PACE, Inc. on May 14, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S5-12	3504	05/14/91
S6-17	3506	05/14/91
S6-17TB	3505	05/14/91
V140V5FS	3508	05/14/91
V140V5FB	3507	05/14/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

Samples from the W.R. Grace treatment plant were preserved with HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. However, until documentation is received from the laboratory, all data, except for Samples V140V5FB and S6-17MSD, for this sample delivery group has been qualified as estimated.

#### A. Initial

Initial calibration criteria were met on 5/16/91 and 5/23/91.

#### B. Continuing

Continuing calibration criteria were met on 5/23/91 and 5/25/91.

#### IV. Blanks

The trip blank, field blank, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria with the exception of toluene d-8 in Sample S6-17MS (actual 111; criteria 110). Data were not qualified.



#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-17. The percent recoveries and relative percent difference for 1,1-dichloroethene were below QC criteria in the MS and MSD. No positive results for this compound were detected, so no data were qualified.

The laboratory quantified the spiking compounds using the average relative response factor from the initial calibration rather than the response factor for the continuing calibration. The results discussed in the preceding paragraph pertain to correctly quantified values.

#### VII. Field Duplicates

Samples S6-17 and S6-17DUP were submitted as duplicate samples. However, the laboratory apparently did not run Sample S6-17DUP. Clarification has been requested from the laboratory.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53



Compound	MDL (ug/L)
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Compounds reported in Sample S5-12 were quantified using the relative response factor from the initial calibration rather than the response factor from the continuing calibration. Correct results are listed below.

Compound	Concentration	(ug/L)
1,1-Dichloroethene	0.94	
1,1-Dichloroethane	2.2	
1,1,1-Trichloroethane	19	

Spiking compound concentrations were also quantified incorrectly, as discussed in Section VI.

The result for methylene chloride in Sample S5-12 was below the MDL determined by the PQL study for this project. This result was corrected to "ND."

All other results and detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.



#### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

All positive results and detection limits for this sample delivery group, with the exception of Samples V140V5FB and S6-17MSD were qualified as estimated because of the manual integration of areas for most of the compounds.

Compound concentrations were corrected for Samples S5-12 and S6-17MS.

00039

UNIFIRST ENSR	PACR	Project	Number:	810515504	000
PACE Sample Number: Date Collected: Date Received: Parameter		<u>Units</u>	MDL	95 0035045 05/14/91 05/15/91 S5-12	
ORGANIC ANALYSIS					
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND UJ 25 ND UJ 1.7 ND 1.70.94 2.3 J.2 ND	3/9/91
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W ND 19 20-19 ND W1	
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND	
Ethyl benzene Xylene, total		ug/L ug/L	0.5 0.5	ND ND	

MDL Method Detection Limit
ND Not detected at or above the MDL.

00047

UNIFIRST ENSR	PACR Project	Number:	810515504
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0035053 05/14/91 05/15/91 S6-17 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W Lx 3 4441 ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND   ND -

MDL ND

Method Detection Limit Not detected at or above the MDL.

UNIFIRST ENSR	PACR Project	Number:	810515504
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0035061 05/14/91 05/15/91 <u>S6-17</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND US EXSIGN IND NO NO NO NO NO
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

PACE Project Number: 810515505

00055

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0035070 05/14/91 05/15/91 <u>V140 V5 FS</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W 2x3/9/91 ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE PACE Project Number: 810515505

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0035088 05/14/91 05/15/91 <u>V140 V5 FB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND



#### DATA VALIDATION REPORT

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FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA Samples Collected May 14, 1991

Chemical Analyses Performed by:
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in Samples V131S5FB and V140S5FS; a very low level of 1,2-dichlorobenzene was detected in both Samples V131S5FS and V131S5FD. No tentatively identified compounds were observed in any of the samples in this SDG. No qualifiers have been applied to the reported results.

Problems identified on the Chain of Custody (COC) records include: (1) 10 COC's are included although only 2 are pertinent to this data package; (2) there is no "Accepted by" signature on any but the first COC record; (3) the "Relinquished by" signature does not include the affiliation of the person involved; (4) all of the COC records are difficult to read, the copies provided are very dark; (5) the signature of the sampler at the top of the form includes only a first initial—the full name should be signed here; and (6) cold storage of the samples is not documented; and (7) separate entries should not be made for MS/MSD samples. In addition, the Case Narrative states that the samples were received at the lab on May 14, while the COC's indicate lab receipt could not have taken place before May 15.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

TRILLIUMING

These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.



#### Case Narrative

Six water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 14, 1991 and received by Pace, Inc. on May 15, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

Client ID	<u>Lab ID</u>	Collection Date
V140S5FS	3513	5/14/91
V131S5FS	3514	5/14/91
V131S5FD	3515	5/14/91
V131S5FB	3516	5/14/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810515.505.

# TRILLIUMING

#### Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were placed in cold storage in the field, at the time of collection. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case, since no otherwise unqualified positive results are reported for the samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria. Raw data were missing for the DFTPP run on 6/20/91, File D2737, under which all the samples in this SDG were run. This data was requested from the laboratory and has been provided; a copy is attached to this report. The abundances on the mass listing do not match those listed on the Form V for this DFTPP run, however both are within the established criteria. The difference is likely due to the use of a different scan number to generate the spectrum that was used to fill out the summary form. No data are affected.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No internal standard (IS) or surrogate peaks were manually integrated; data do not appear to be affected.

#### A. Initial

All samples in this SDG were analyzed under an initial calibration (IC) performed on 6/19/91. All criteria were met for this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 4-chloroaniline (37.5), 3-nitroaniline (41.4), and 3,3'-dichlorobenzidine (44.7). In addition, Response Factors (RF) could not be verified in all cases using the areas on the Quant Reports; it appeared that some manual areas were used that did not get documented in the raw data. Corrected raw data was requested from the laboratory, and has been provided; a copy is attached to this report. All RF's are verifiable using the corrected raw data.

# 1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

OVIBISFD

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3515.0

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2744

evel: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

\_xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

, <del></del>	<del></del>	
108-95-2Phenol	10.	U
111-44-4bis(2-Chloroethyl)ether	10.	Ü
95-57-82-Chlorophenol	10.	U
541-73-11,3-Dichlorobenzene	10.	Ū
106-46-71,4-Dichlorobenzene	10.	U
100-51-6Benzyl alcohol	10.	U
95-50-11,2-Dichlorobenzene	1.	J
95-48-72-Methylphenol	10.	U
108-60-1bis(2-Chloroisopropyl)ether	10.	U
106-44-54-Methylphenol	10.	ט
621-64-7N-Nitroso-di-n-propylamine	10.	U
67-72-1Hexachloroethane	10.	ט
98-95-3Nitrobenzene	10.	ט
78-59-1Isophorone	10.	ט
88-75-52-Nitrophenol	10.	U
105-67-92,4-Dimethylphenol	10.	ט
65-85-0Benzoic acid	50.	U
111-91-1bis(2-Chloroethoxy)methane	10.	U
120-83-22,4-Dichlorophenol	10.	U
120-82-11,2,4-Trichlorobenzene	10.	ט
91-20-3Naphthalene	10.	ט
106-47-84-Chloroaniline	10.	U
87-68-3Hexachlorobutadiene	10.	U
59-50-74-Chloro-3-methylphenol	10.	U
91-57-62-Methylnaphthalene	10.	U
77-47-4Hexachlorocyclopentadiene	10.	U
88-06-22,4,6-Trichlorophenol	10.	Ū
95-95-42,4,5-Trichlorophenol	50.	บ
91-58-72-Chloronaphthalene	10.	U
88-74-42-Nitroaniline	50.	U
131-11-3Dimethylphthalate	10.	ט
208-96-8Acenaphthylene	10.	U
606-20-22,6-Dinitrotoluene	10.	ט



#### B. Continuing

The samples in this SDG were also run under a continuing calibration (CC) standard on 6/20/91. Criteria were met for this calibration with the exception of the %D for 3,3'-dichlorobenzidine (28.4), 2,4-dinitrophenol (31.9), 4-nitroaniline (28.1), and 3-nitroaniline (47.1). No data are affected.

#### IV. Blanks

No target compounds were detected in SBLK1, extracted 5/20 and analyzed 6/20. No tentatively identified compounds were reported, however small peaks (below the reportable level) are observed early in the chromatogram, prior to the first surrogate peak, at approximate retention times of 7.5 and 7.8 minutes. Small peaks at similar retention times are visible in the chromatograms for all the samples in this SDG; none were large enough to report.

No target compounds or reportable TIC's were detected in the field blank, V131S5FB.

#### V. Surrogate Recovery

All surrogate recoveries were within established QC criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample V131S5FS. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within established QC criteria.

#### VII. Field Duplicates

Samples V131S5FS and V131S5FD were field duplicates. Only one target analyte, 1,2-dichlorobenzene, was detected in these samples, at 1 ug/L in each case. Results were reported with a "J" qualifier, since they are below the quantitation limit of 10 ug/L. No TIC's were detected in either sample.

#### VIII. Internal Standards Performance

All internal standard areas and retention times were within the established QC limits for acceptance.

#### SEMIVOLAL\_LE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V131S5FD 00000

⊥ab Name: PACE

Contract:

ab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3515.0

ample wt/vol: 1000. (g/mL) ML Lab File ID: D2744

'evel: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

l (traction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
2		-		
3.				
4				
5		_		<b> </b>
6		-		
/ ·		-		
8		-		
9		-		
10.		-		
12		·		
13.			<u> </u>	
4	•			
<b>⊥5.</b>			<del></del>	
16				
/ •				
_8				
19		İ		
C		\	<u> </u>	
1				
22.				
3				
25	-			
26.				
7.				
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29				
)				



#### IX. TCL Compound Identification

Compound identifications are properly reported and documented in all cases.

#### X. Compound Quantitation and Reported Detection Limits

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

#### XI. Tentatively Identified Compounds

No tentatively identified compounds were reported in any of the samples in this SDG. Two early-eluting peak in the method blank were also observed in the samples, but none was high enough to be considered for reporting.

#### XII. System Performance

No system performance problems were observed in the raw data presented in this data package.

#### XIII. Overall Assessment

Sample results are usable as reported, no qualifiers have been applied.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:

- 1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.
- 2. Transfer signatures are incomplete: no "Accepted by" signature is present on 9 of the 10 forms in the package, and the "Relinquished by" signature does not include the affiliation of the person involved.
- 3. The signature as well as the written name of the sampler at the top of the form should be a  $\underline{\text{full}}$  name, not first initial only.
  - 4. Cold storage is not documented.

- 5. MS/MSD analyses are a <u>laboratory-initiated</u> quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".
  - 6. Cross-outs are not initialled or dated.

Manually integrated areas should be documented in the data package to allow review of the integration method used.

ab Code: PACE Case No.: EPC

#### SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

SAS No.: SDG No.:

0001

Matrix: (soil/water) WATER Lab Sample ID: 3513.4

Lample wt/vol: 1000. (g/mL) ML Lab File ID: D2747

evel: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

straction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/91

CPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

108-95-2Phenol	10.	U
111-44-4bis(2-Chloroethyl)ether	10.	Ū
95-57-82-Chlorophenol	10.	U
541-73-11,3-Dichlorobenzene	10.	U
106-46-71,4-Dichlorobenzene	10.	U
100-51-6Benzyl alcohol	10.	U
95-50-11,2-Dichlorobenzene	10.	U
95-48-72-Methylphenol	10.	υ
108-60-1bis(2-Chloroisopropyl)ether	10.	U
106-44-54-Methylphenol	10.	ט
621-64-7N-Nitroso-di-n-propylamine_	10.	U
67-72-1Hexachloroethane	10.	ט
98-95-3Nitrobenzene	10.	U
78-59-1Isophorone	10.	ប
88-75-52-Nitrophenol	10.	U
105-67-92,4-Dimethylphenol	10.	ប
65-85-0Benzoic acid	50.	U
111-91-1bis(2-Chloroethoxy)methane_	10.	U
120-83-22,4-Dichlorophenol	10.	U
120-82-11,2,4-Trichlorobenzene	10.	ט
91-20-3Naphthalene	10.	U
106-47-84-Chloroaniline	10.	บ
87-68-3Hexachlorobutadiene	10.	U
59-50-74-Chloro-3-methylphenol	10.	U
91-57-62-Methylnaphthalene	10.	ַ
77-47-4Hexachlorocyclopentadiene	10.	บ
88-06-22,4,6-Trichlorophenol	10.	ַ
95-95-42,4,5-Trichlorophenol	50.	U
91-58-72-Chloronaphthalene	10.	U
88-74-42-Nitroaniline	50.	ט
131-11-3Dimethylphthalate	10.	U
208-96-8Acenaphthylene	10.	ט
606-20-22,6-Dinitrotoluene	10.	ט
•		

SEMIVOLA'LLE ORGANICS ANALYSIS DATA SHEET

V140S5FS

Contract: \_ab Name: PACE 00026

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3513.4

ample wt/vol: 1000. (g/mL) ML Lab File ID: D2747

Level: (low/med) LOW Date Received: 5/15/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

<traction: (SepF/Cont/Sonc) SEPF</pre> Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

	T	
99-09-23-Nitroaniline	50.	U
83-32-9Acenaphthene	10.	บ
51-28-52,4-Dinitrophenol	50.	U
100-02-74-Nitrophenol	50.	U
132-64-9Dibenzofuran	10.	U
121-14-22,4-Dinitrotoluene	10.	ט
84-66-2Diethylphthalate	10.	U
7005-72-34-Chlorophenyl-phenylether	10.	U
86-73-7Fluorene	10.	ט
100-01-64-Nitroaniline	50.	U
534-52-14,6-Dinitro-2-methylphenol	50.	ט
86-30-6N-Nitrosodiphenylamine	10.	U
101-55-34-Bromophenyl-phenylether	10.	U
118-74-1Hexachlorobenzene	10.	ט
87-86-5Pentachlorophenol	50.	ט
85-01-8Phenanthrene	10.	U
120-12-7Anthracene	10.	ט
84-74-2Di-n-butylphthalate	10.	ט
206-44-0Fluoranthene	10.	U
129-00-0Pyrene	10.	U
85-68-7Butylbenzylphthalate	i 10.	ט
91=94 13,3'-Dichlorobenzidine	20.	υ
56-55-3Benzo(a)anthracene	10.	U
218-01-9Chrysene	10.	U
117-81-7bis(2-Ethylhexyl)phthalate_	10.	ט
117-84-0Di-n-octylphthalate	10.	U
205-99-2Benzo(b) fluoranthene	10.	ט
207-08-9Benzo(k) fluoranthene	10.	U
50-32-8Benzo(a)pyrene	10.	U
193-39-5Indeno(1,2,3-cd)pyrene	10.	U
53-70-3Dibenzo(a,h)anthracene	10.	บ
191-24-2Benzo(g,h,i)perylene	10.	บ

## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

b Name: PACE

Contract:

00027

V140S5FS

ab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3513.4

! imple wt/vol:

1000. (g/mL) ML

Lab File ID: D2747

level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS: Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	(
1				===
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## 1B

## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

00031

V131S5FS

Lab Name: PACE

Contract:

SDG No.:

ratrix: (soil/water) WATER

Lab Sample ID: 3514.2

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2748

level: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

E\_traction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

TC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

Q

	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	ט
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	1.	J
95-48-7	2-Methylphenol	10.	U
108-60-1	bis(2-Chloroisopropyl)ether	10.	ט
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	ט
67-72-1	Hexachloroethane	10.	ับ
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	טו
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	שו
65-85-0	Benzoic acid	50.	ט
	bis(2-Chloroethoxy)methane	10.	ט
	2,4-Dichlorophenol	10.	ט
	1,2,4-Trichlorobenzene	10.	ט
<del>91-20-</del> 3	Naphthalene	10.	ับ
106-47-8	4-Chloroaniline	10.	ט
	Hexachlorobutadiene	10.	U
	4-Chloro-3-methylphenol	10.	U
	2-Methylnaphthalene	10.	บ
77-47-4	Hexachlorocyclopentadiene	10.	U
	2,4,6-Trichlorophenol	10.	U
	2,4,5-Trichlorophenol	50.	U
	2-Chloronaphthalene	10.	บ
	2-Nitroaniline	50.	Ū
	Dimethylphthalate	10.	Ū
	Acenaphthylene	10.	ŭ
	2,6-Dinitrotoluene	10.	U

SEMIVOLA'LLE ORGANICS ANALYSIS DATA SHEET

V131S5FS

Contract: 0 0 0 3 2 ab Name: PACE

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3514.2

Lab File ID: D2748 ample wt/vol: 1000. (g/mL) ML

Date Received: 5/15/91 Level: (low/med) LOW

. Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

Date Analyzed: 6/20/91 ctraction: (SepF/Cont/Sonc) SEPF

1.00 Dilution Factor: GPC Cleanup: (Y/N) N рн: 7.0

> CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline		50	4
83-32-9	Acenaphthene		10	).  U
51-28-5	2,4-Dinitrophenol	L	50	).  U
	4-Nitrophenol		50	t t
132-64-9	Dibenzofuran		10	l l
121-14-2	2,4-Dinitrotoluer	re	10	. U
84-66-2	Diethylphthalate_		10	
7005-72-3	4-Chlorophenyl-ph	enylether		. เบ
	Fluorene		10	
	4-Nitroaniline		50	
534-52-1	4,6-Dinitro-2-met	hylphenol	50	. {U
86-30-6	N-Nitrosodiphenyl	amine		.  U
101-55-3	4-Bromophenyl-phe	nylether		. U
	Hexachlorobenzene		10	. บ
	Pentachlorophenol		50	.  U
85-01-8	Phenanthrene		10	. บ
120-12-7	Anthracene		10	. U
84-74-2	Di-n-butylphthala	te	10	. U
206-44-0	Fluoranthene		10	. Ju
129-00-0	Pyrene		10	. U
	Butylbenzylphthal	ate	10	. ju
	3,3 -Dichlorobenz		20	. ju
	Benzo(a) anthracen		10	.  U
	Chrysene		_ 10	. \U
117-81-7	bis(2-Ethylhexyl)	phthalate	10	. U
117-84-0	Di-n-octylphthala	te	10	.   U
205-99-2	Benzo(b) fluoranth	ene	10	. U
	Benzo(k) fluoranth		10	
	Benzo(a)pyrene		10	3
193-39-5	Indeno(1,2,3-cd)p	yrene	!	7
53-70-3	Dibenzo(a,h)anthr	acene	10	l l
191-24-2	Benzo(g,h,i)peryl	ene	10	
TJT 64-6	Denzo (3/11/2/2021-		_	

## SEMIVOLAT LE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V131S5FS

Lab Name: PACE

Contracta 0033

ab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3514.2

ample wt/vol: 1000. (g/mL) ML Lab File ID: D2748

Tevel: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

1 straction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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EPA SAMPLE NO.

OVIBUSTO

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3515.0

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2744

evel: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

\_xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

108-95-2Phenol	10.	ט
111-44-4bis(2-Chloroethyl)ether	10.	ט
95-57-82-Chlorophenol	10.	טו
541-73-11,3-Dichlorobenzene	10.	ט
106-46-71,4-Dichlorobenzene	10.	U
100-51-6Benzyl alcohol	10.	ט
95-50-11,2-Dichlorobenzene	1.	J
95-48-72-Methylphenol	10.	ט
108-60-1bis(2-Chloroisopropyl)ether	10.	ט
106-44-54-Methylphenol	10.	טו
621-64-7N-Nitroso-di-n-propylamine	10.	υ
67-72-1Hexachloroethane	10.	U
98-95-3Nitrobenzene	10.	ט
78-59-1Isophorone	10.	ט
88-75-52-Nitrophenol	10.	ט
105-67-92,4-Dimethylphenol_	10.	ט
65-85-0Benzoic acid	50.	ן ט
111-91-1bis(2-Chloroethoxy) methane	10.	ן ט
120-83-22,4-Dichlorophenol	10.	U I
120-82-11,2,4-Trichlorobenzene	10.	បែ
91-20-3Naphthalene	10.	lu l
106-47-84-Chloroaniline	10.	บ
87-68-3Hexachlorobutadiene	10.	U
59-50-74-Chloro-3-methylphenol	10.	ן מ
91-57-62-Methylnaphthalene	10.	U
77-47-4Hexachlorocyclopentadiene	10.	U
88-06-22,4,6-Trichlorophenol	10.	U
95-95-42,4,5-Trichlorophenol	50.	U
91-58-72-Chloronaphthalene	10.	ΰ
88-74-42-Nitroaniline	50.	บ
131-11-3Dimethylphthalate	10.	บ
208-96-8Acenaphthylene	10.	U
606-20-22,6-Dinitrotoluene	10.	U
		-

## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

V131S5FD 00039

ab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3515.0

ample wt/vol: 1000. (g/mL) ML Lab File ID: D2744

Level: (low/med) LOW

Moisture: not dec.100. dec. 0.

Date Received: 5/15/91 Date Extracted: 5/20/91

xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND

(ug/L or ug/Kg) UG/L

Q

99-09-23-Nitroaniline 83-32-9Acenaphthene 51-28-52,4-Dinitrophenol 100-02-74-Nitrophenol 132-64-9Dibenzofuran 121-14-22,4-Dinitrotoluene 84-66-2Diethylphthalate 7005-72-34-Chlorophenyl-phenylether 86-73-7Fluorene 100-01-64-Nitroaniline 534-52-14,6-Dinitro-2-methylphenol 86-30-6N-Nitrosodiphenylamine 101-55-34-Bromophenyl-phenylether 118-74-1Hexachlorobenzene 87-86-5Pentachlorophenol 85-01-8Phenanthrene 120-12-7Anthracene 84-74-2Di-n-butylphthalate 206-44-0Fluoranthene 129-00-0		1
51-28-52,4-Dinitrophenol  100-02-74-Nitrophenol  132-64-9Dibenzofuran  121-14-22,4-Dinitrotoluene  84-66-2Diethylphthalate  7005-72-34-Chlorophenyl-phenylether  86-73-7Fluorene  100-01-64-Nitroaniline  534-52-14,6-Dinitro-2-methylphenol  86-30-6N-Nitrosodiphenylamine  101-55-34-Bromophenyl-phenylether  118-74-1Hexachlorobenzene  87-86-5Pentachlorophenol  85-01-8Phenanthrene  120-12-7Anthracene  84-74-2Di-n-butylphthalate  206-44-0Fluoranthene  129-00-0Pyrene  85-68-7Butylbenzylphthalate  91-94-13,3Dichloropenzidine  56-55-3Benzo(a) anthracene  218-01-9	50.	U
100-02-74-Nitrophenol 132-64-9Dibenzofuran 121-14-22,4-Dinitrotoluene 84-66-2Diethylphthalate 7005-72-34-Chlorophenyl-phenylether 86-73-7Fluorene 100-01-64-Nitroaniline 534-52-14,6-Dinitro-2-methylphenol 86-30-6N-Nitrosodiphenylamine 101-55-34-Bromophenyl-phenylether 118-74-1Hexachlorophenol 85-01-8Pentachlorophenol 85-01-8Phenanthrene 120-12-7Anthracene 84-74-2Di-n-butylphthalate 206-44-0Fluoranthene 129-00	10.	U
132-64-9	50.	ט
121-14-22,4-Dinitrotoluene 84-66-2Diethylphthalate 7005-72-34-Chlorophenyl-phenylether 86-73-7Fluorene 100-01-64-Nitroaniline 534-52-14,6-Dinitro-2-methylphenol 86-30-6N-Nitrosodiphenylamine 101-55-34-Bromophenyl-phenylether 118-74-1Hexachlorobenzene 87-86-5Pentachlorophenol 85-01-8Phenanthrene 120-12-7Anthracene 84-74-2Di-n-butylphthalate 206-44-0Fluoranthene 129-00-0Pyrene 85-68-7Butylbenzylphthalate 91-94-13,5:-Dichloropenzidine 56-55-3Benzo(a) anthracene 218-01-9	50.	U
84-66-2	10.	U
84-66-2	10.	U
7005-72-34-Chlorophenyl-phenylether	10.	U
86-73-7Fluorene 100-01-64-Nitroaniline 534-52-14,6-Dinitro-2-methylphenol 86-30-6N-Nitrosodiphenylamine 101-55-34-Bromophenyl-phenylether 118-74-1Hexachlorobenzene 87-86-5Pentachlorophenol 85-01-8Phenanthrene 120-12-7Anthracene 84-74-2Di-n-butylphthalate 206-44-0Fluoranthene 129-00-0	10.	U
## Sad-52-1	10.	Ū
86-30-6N-Nitrosodiphenylamine  101-55-34-Bromophenyl-phenylether  118-74-1Hexachlorobenzene  87-86-5Pentachlorophenol  85-01-8Phenanthrene  120-12-7Anthracene  84-74-2Di-n-butylphthalate  206-44-0	50.	ט
101-55-34-Bromophenyl-phenylether 118-74-1Hexachlorobenzene 87-86-5Pentachlorophenol 85-01-8Phenanthrene 120-12-7Anthracene 84-74-2	50.	U
118-74-1	10.	ט
87-86-5Pentachlorophenol 85-01-8Phenanthrene 120-12-7Anthracene 84-74-2Di-n-butylphthalate 206-44-0	10.	U
87-86-5Pentachlorophenol 85-01-8Phenanthrene 120-12-7Anthracene 84-74-2Di-n-butylphthalate 206-44-0Pyrene 129-00-0	10.	U
85-01-8Phenanthrene 120-12-7Anthracene 84-74-2Di-n-butylphthalate 206-44-0Fluoranthene 129-00-0Pyrene 85-68-7Butylbenzylphthalate 91-94-13,3:-Dichloropenzidine 56-55-3Benzo(a)anthracene 218-01-9Chrysene 117-81-7bis(2-Ethylhexyl)phthalate 117-84-0Di-n-octylphthalate 205-99-2Benzo(b)fluoranthene	50.	U
120-12-7Anthracene 84-74-2Di-n-butylphthalate 206-44-0Fluoranthene 129-00-0Pyrene 85-68-7Butylbenzylphthalate 91-94-13,3:-Dichloropenzidine 56-55-3Benzo(a)anthracene 218-01-9Chrysene 117-81-7bis(2-Ethylhexyl)phthalate 117-84-0	10.	U
84-74-2Di-n-butylphthalate 206-44-0Fluoranthene 129-00-0	10.	บ
206-44-0Fluoranthene  129-00-0Pyrene  85-68-7Butylbenzylphthalate  91-94-13,5:-Dichloropenzidine  56-55-3Benzo(a) anthracene  218-01-9Chrysene  117-81-7bis(2-Ethylhexyl) phthalate  117-84-0	10.	ט
129-00-0	10.	ט
85-68-7Butylbenzylphthalate 91-94-13,3:-Dichloropenzidine 56-55-3Benzo(a)anthracene 218-01-9Chrysene 117-81-7bis(2-Ethylhexyl)phthalate 117-84-0Di-n-octylphthalate 205-99-2Benzo(b)fluoranthene 207-08-9Benzo(k)fluoranthene	10.	ט
91-94-123,3:-Dichloropenzidine 56-55-3Benzo(a)anthracene 218-01-9Chrysene 117-81-7bis(2-Ethylhexyl)phthalate 117-84-0Di-n-octylphthalate 205-99-2Benzo(b)fluoranthene 207-08-9Benzo(k)fluoranthene	10.	ĺυ
56-55-3Benzo(a) anthracene	20.	Ìυ
218-01-9Chrysene 117-81-7bis(2-Ethylhexyl)phthalate 117-84-0Di-n-octylphthalate 205-99-2Benzo(b)fluoranthene 207-08-9Benzo(k)fluoranthene	10.	U
117-81-7bis(2-Ethylhexyl)phthalate_ 117-84-0Di-n-octylphthalate_ 205-99-2Benzo(b)fluoranthene_ 207-08-9Benzo(k)fluoranthene_	10.	U
117-84-0Di-n-octylphthalate 205-99-2Benzo(b) fluoranthene 207-08-9Benzo(k) fluoranthene	10.	ט
205-99-2Benzo(b) fluoranthene 207-08-9Benzo(k) fluoranthene	10.	U
207-08-9Benzo(k) fluoranthene	10.	U
50-32-8Benzo(a)pyrene	10.	U
	10.	ט
193-39-5Indeno(1,2,3-cd)pyrene	10.	ט
53-70-3Dibenzo(a,h)anthracene	10.	Ū
191-24-2Benzo(g,h,i)perylene	10.	U

## SEMIVOLA1\_LE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

ab Name: PACE Contract: V131S5FD 00040

ab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3515.0

ample wt/vol: 1000. (g/mL) ML

Lab File ID: D2744

'evel: (low/med) LOW

Date Received: 5/15/91

% Moisture: not dec.100.

dec. 0.

Date Extracted: 5/20/91

1 ctraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS: Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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V13785F45

## 1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

atrix: (soil/water) WATER Lab Sample ID: 3516.9

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2749

evel: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

Lxtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/20/91

C Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

,	<del></del>	
108-95-2Phenol	10.	U
111-44-4bis(2-Chloroethyl)ether	10.	U
95-57-82-Chlorophenol	10.	U
541-73-11,3-Dichlorobenzene	10.	ט
106-46-71,4-Dichlorobenzene	10.	ט
100-51-6Benzyl alcohol_	10.	U
95-50-11,2-Dichlorobenzene	10.	U
95-48-72-Methylphenol	10.	U
108-60-1bis(2-Chloroisopropyl)ether	10.	U
106-44-54-Methylphenol	10.	U
621-64-7N-Nitroso-di-n-propylamine_	10.	ט
67-72-1Hexachloroethane	10.	U
98-95-3Nitrobenzene	10.	טן
78-59-1Isophorone	10.	U
88-75-52-Nitrophenol	10.	U
105-67-92,4-Dimethylphenol	10.	U
65-85-0Benzoic acid	50.	U
111-91-1bis(2-Chloroethoxy)methane	10.	U
120-83-22,4-Dichlorophenol	10.	U
120-82-11,2,4-Trichlorobenzene	10.	ען
91 20 0Naphthaiene	j 10.	ַן ט
106-47-84-Chloroaniline	10.	U
87-68-3Hexachlorobutadiene	10.	ט
59-50-74-Chloro-3-methylphenol	10.	U
91-57-62-Methylnaphthalene	10.	U
77-47-4Hexachlorocyclopentadiene	10.	ט
88-06-22,4,6-Trichlorophenol	10.	U
95-95-42,4,5-Trichlorophenol	50.	ט
91-58-72-Chloronaphthalene	10.	ט
88-74-42-Nitroaniline	50.	U
131-11-3Dimethylphthalate	10.	U
208-96-8Acenaphthylene	10.	<b>ט</b>
606-20-22,6-Dinitrotoluene	10.	U

### 1C SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

ab Name: PACE Contract:

V131S5FB () !) () 4 6

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3516.9

: imple wt/vol: 1000. (g/mL) ML Lab File ID: D2749

Javel: (low/med) LOW Date Received: 5/15/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

99-09-23-Nitroaniline	50.	ט
83-32-9Acenaphthene	10.	U
51-28-52,4-Dinitrophenol	50.	U
100-02-74-Nitrophenol	50.	טו
132-64-9Dibenzofuran	10.	ט
121-14-22,4-Dinitrotoluene	10.	ט
84-66-2Diethylphthalate	10.	ט
7005-72-34-Chlorophenyl-phenylether	10.	U
86-73-7Fluorene	10.	U
100-01-64-Nitroaniline	50.	U
534-52-14,6-Dinitro-2-methylphenol	50.	U
86-30-6N-Nitrosodiphenylamine	10.	U
101-55-34-Bromophenyl-phenylether	10.	U
118-74-1Hexachlorobenzene	10.	U
87-86-5Pentachlorophenol	50.	U
85-01-8Phenanthrene	10.	U
120-12-7Anthracene	10.	U
84-74-2Di-n-butylphthalate	10.	U
206-44-0Fluoranthene	10.	U
129-00-0Pyrene	10.	U
85-68-7Butylbenzylphthalate	10.	ט
91-94-13,3'-Dichlorobenzidine	20.	U
56-55-3Benzo(a)anthracene	10.	U
218-01-9Chrysene	10.	U
117-81-7bis(2-Ethylhexyl)phthalate	10.	U
117-84-0Di-n-octylphthalate	10.	U
205-99-2Benzo(b) fluoranthene	10.	U
207-08-9Benzo(k) fluoranthene	10.	U
50-32-8Benzo(a)pyrene	10.	U
193-39-5Indeno(1,2,3-cd)pyrene	10.	บ
53-70-3Dibenzo(a,h)anthracene	10.	ט
191-24-2Benzo(g,h,i)perylene	10.	ប
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## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V131S5FB

Lab Name: PACE

Contract:

ab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3516.9

ample wt/vol: 1000. (g/mL) ML

Lab File ID: D2749

revel: (low/med) LOW

Date Received: 5/15/91

\* Moisture: not dec.100. dec. 0.

Date Extracted: 5/20/91

ctraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/20/91

GPC Cleanup: (Y/N) N

рн: 7.0

Dilution Factor:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G & H PROJECT

AREAL SAMPLING

**VOLATILES ANALYSIS DATA** 

Samples Collected 5/15/91

Chemical Analyses Performed By:
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### **EXECUTIVE SUMMARY**

Detection limits for aromatic compounds were estimated in Samples UG16, CLUG16, FDUG16, and FBUG16. Results for 2-butanone were rejected in all four samples.

Low levels of trichloroethene not originally reported by the laboratory in Samples UG16, CLUG16, and FDUG16 have been added to the data summary forms and Form I's; spectra confirming the identification of this compound were requested from the laboratory and are provided with this validation report.

Problems identified on the Chain of Custody records include: (1) corrections to entries on the forms are made incorrectly, and do not include the date (initials are recorded); (2) two of the three transfer signatures do not indicate the affiliation(s) of the individuals involved, and the samples were not relinquished prior to the final acceptance signature; (3) documentation of preservation is unclear, i.e. the meaning of a checkmark in the "VOA" column in the "Preservatives" section of the custody form is unknown; (4) separate entries should not be made on the custody record for MS/MSD samples; and (5) sample numbers recorded on the Form I's in the data package are not consistent with the sample numbers recorded on the Chain of Custody, e.g. "CLUG16" is on the custody record and "UG16CL" is on Form I.

Validation of organic data is conducted in conformance with U.S. Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses (February 1, 1988), with modifications by EPA Region I (November 1, 1988).

Based on the supporting documentation, qualifier codes as reported by the laboratory may be added, deleted, or modified by the data validator. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the referenced Functional Guidelines:

- U The material was analyzed for, but not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).



UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary forms and Form I's (copied from the data package) to qualify some of the results as appropriate based on the data review.



### Case Narrative

Six groundwater samples (including separate samples for matrix spike and matrix spike duplicate analysis) were collected on May 15, 1991, and received by PACE, Inc. on May 16, 1991. The laboratory was requested to perform volatile organics analysis (VOA); the EPA Contract Laboratory Program (CLP) Statement of Work dated 2/88 was followed.

The following samples are included in this Sample Delivery Group:

Client ID	<u>Lab ID</u>	<u>Collection Date</u>
UG16	3568	05/15/91
FDUG16	3569	05/15/91
CLUG16	3567	05/15/91
FBUG16	3572	05/15/91

Volatiles analysis results for these samples were reported by the laboratory under Project Number 810516.510.



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

Samples UG16, CLUG16, FDUG16, and FBUG16 were analyzed beyond the 7-day holding time for samples that are not preserved with hydrochloric acid (HCl) in the field, but were all analyzed within 14 days of collection. Detection limits for all aromatic compounds (benzene, toluene, ethylbenzene, chlorobenzene, styrene, and xylenes) in these samples are qualified as estimated "UJ"; no positive results were reported for any of the aromatic compounds.

The chain of custody record indicates that the samples were "chilled", but this reference could be interpreted to be applicable only to Sample CLUG16, since it is recorded in the "Remarks" column for that sample entry. Care should be taken to clearly document activities as applicable to any or all samples on the custody form. The meaning and use of the "VOA" column in the "Preservatives" section of the custody form is also unclear. The box is checked for each sample entered on the form, but what, if any, preservative was used is unknown. It has been assumed that the required VOA preservative, hydrochloric acid (HCl), was not used for the purposes of this validation.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data are affected.

### A. Initial

The samples were analyzed under a single initial calibration, performed on 5/17/91. All criteria were met in this calibration with the exception of the response factor (RF) and Percent Relative Standard Deviation (%RSD) for 2-butanone (RF actual 0.03, criterion 0.10; %RSD actual 39.9, criterion 30). Results for 2-butanone are rejected, "R", in Samples UG16, CLUG16, FDUG16, and FBUG16 due to reduced sensitivity as indicated by the very low RF.



## B. Continuing

Sample analyses were performed on instrument G on 5/23/91. Continuing calibration criteria were met with the exception of the RF and Percent Difference (%D) for 2-butanone (RF actual 0.015, criterion 0.10; %D actual 55.9, criterion 25), and the %D for bromomethane (actual 26, criterion 25), and vinyl acetate (actual 28, criterion 25). No additional data are affected.

### IV. Blanks

Acetone was reported at 5 ug/L in VBLK01; no target compounds or extraneous peaks were detected in the field blank. Acetone was not detected in any of the samples, therefore no data are affected.

## V. Surrogate Recovery

All surrogate recoveries were within acceptable criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample UG16. Percent Recoveries (%R) for benzene and toluene were high in both the MS and MSD:

	<u>%R-MS</u>	%R-MSD	<pre>QC Limits</pre>
Benzene	147	157	76-127
Toluene	137	157	76-125

Corresponding Relative Percent Difference (RPD) values are within limits, due to the consistency of the results. No data are affected.

Recoveries for trichloroethene were calculated without accounting for the low level (69 ppb) detected in the unspiked sample. Corrected recoveries are 106% and 109%; corrected RPD is 3%. All values remain within QC limits. A corrected Form III is included with this report.

### VII. Field Duplicates

Compounds and concentrations reported for Samples UG16, FDUG16, and CLUG16 were as follows:



Compound	<u>UG16</u>	FDUG16	CLUG16
Trichloroethene	69 ppb	75 ppb	81 ppb
Tetrachloroethene	1700 ppb	1800 ppb	1900 ppb

Agreement between the results for these three samples was very good.

### VIII. Internal Standards Performance

Internal standard areas and retention times were within acceptable limits for all sample and QC analyses in this sample delivery group.

## IX. TCL Compound Identification

Reported TCL compound identifications were acceptable. Levels of trichloroethene just above the CRQL were observed on the quantitation reports for Samples UG16, FDUG16, and CLUG16, but were not reported by the laboratory. Spectra for these peaks were requested, and are included with this report. Based on review of these spectra, it has been determined that trichloroethene is identifiable in each of the samples and should be reported.

### X. Compound Quantitation and Reported Detection Limits

Samples UG16, FDUG16, and CLUG16 were analyzed as dilutions to achieve tetrachloroethene results within the linear range of the instrument; no undiluted runs of these samples were reported or performed, per conversation with C. Corkey of PACE, Inc. The tetrachloroethene concentrations reported in the diluted analyses were acceptable.

Reportable levels of trichloroethene have been added to the data summary forms and Form I's for Samples UG16, FDUG16, and CLUG16.

Contract Required Quantitation Limits (CRQL's) were appropriately adjusted to reflect the dilutions performed for each sample.

### XI. Tentatively Identified Compounds

No tentatively identified compounds (TIC's) were observed or reported in these samples.



### XII. System Performance

System performance was satisfactory throughout the analysis of these samples.

### XIII. Overall Assessment

The sample results are usable as reported with the following qualifications and modifications:

Detection limits for the aromatic compounds were estimated in all four samples.

Results for 2-butanone were rejected in all four samples.

Positive values for trichloroethene were added to the data summary forms for Samples UG16, FDUG16, and CLUG16.

Incomplete, unclear, or inaccurate Chain of Custody records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the custody record in this data package:

- 1. Corrections do not include the date they were made, and in one case a "write-over" is used.
- 2. Two of the three signatures do not include the affiliations of the parties involved, and no "Relinquished by" signature is recorded prior to (presumed) laboratory receipt.
- 3. Documentation of preservation is unclear, including the reference to cold storage and the use of the "VOA" column in the "Preservatives" section of the form.
- 4. MS/MSD analyses are a <u>laboratory-initiated</u> quality control activity; there should not, therefore, be separate samples on the chain of custody identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.

# VOL 'ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

: XG1E

Lab Name: PACE

Contract:

Matrix: (soil/water) WATER

Lab Sample ID: 3568.1

Sample wt/vol: 0.4 %. (g/mL) ML Lab File ID: G3080  $CaE_{7}//q_1$ 

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pach/cap) PACK

Dilution Factor: 12.50

CONCENTRATION UNI
-------------------

CAS NO.	COMPOUND	(ug/L or	ug/Kg) L	JG/L	
74-07-2-	Chloromethane		;	120.	 ; ;L
74-07-3-	Bromomethane_		;	120.	; L
75-01-1-	Vinyl Chloride		;	120.	16
75-01-4-	Chloroethane_	<del></del>	;	120.	16
75-00-3-	Methylene Chl		:	62.	10
73-03-2- 27-63-1-	Acotono	., Ine	;	120.	: 0
75-15-0-	Acetone		;	62.	11
75-35-4-	1,1-Dichloroe	thene	',	62.	; (
75-34-3-	1,1-Dichloroe	thane	;	62.	11
540-59-0-	1,2-Dichloroe	thone (total	<del></del> ;	62.	11
67-66-9-	Chloroform	chene (cocar	′¦	62.	11
107-06-3-	1,2-Dichloroe		',	62.	11
707-00-2-		unane		120.	11
70-33-3-	2-Butanone 1,1,1-Trichlor			62.	11
71-33-6-	Carbon Tetrack	rbechane	'	62.	11
108-05-4-	Usevi Asetato	110r tue	¦	120.	: 1
75-27-1-	Vinyl Acetate Bromodichlorom		;	62.	11
70-27-4-	1,2-Dichlorop	nethane	;	62.	11
10061-01-5-	cis-1,3-Dichlo	chaus	¦	62.	11
79-01-6-	Trichloroether	orobrobene	:	9. 62.	
174-48-1-	Dibromochlorom	nethane	ص :	62.	- , c
79-00-5-	1,1,2-Trichlor	coethage	CAE		11
				62.	11
10061-07-6-	Benzene Trans-1,3-Dich	lorantanene	;	62.	10
75-75-9-	Bromoform	rrondo apene	;	62.	: [
108-10-1-	4-Methy1-2-Per	tanone	;	120.	; [
591-78-6-	2-Hexanone	, o car ico i i co i co i co i co i co i co i	;	120.	1
107-18-4-	Tetrachloroeth		;	1700.	
	1,1,2,2-Tetrac			62.	11
109-88-3-	Toluene	. II to the charle	;	62.	; L
100-00-3-	Chlorobenzene		;	62.	16
100 30-7	Ethylbenzene		;	62.	: L
100-41-4	C+vxepe		!	62.	16
100-41-001	Styrene Xylene(total)		:	62.	11

# VOL TLE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

; XG16CL

Lab Name: PACE

Contract:

Matrix: (soil/water) WATER

Lab Sample ID: 3567.3

Sample wt/vol: 0-4 %. (g/mL) ML Lab File ID: G3079 CaE 7/1/91

Level: (low/med) LOW

. Date Received: 5/16/91

'/ Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 12.50

CONCE	NTRA	NOITA	UNITS:
(ug/L	or	ug/kg	) UG/L

	<del>_</del>	CONCENT				_
CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/L		Q
				·····		:
1 74-87-3	Chloromethane _		;	120.	: U	` <b>:</b>
1 74-83-9	Bromomethane		;	120.	١U	1
75-01-4	Vinyl Chloride_			120.	١U	:
1 75-00-3	Chloroethane			120.	: U	;
75-09-2	Methylene Chlor	ıde	;	62.	١U	+
67-64-1	Acetone		;	120.	١U	;
; 75-15-0	Carbon Disulfid	e	:	62.	ŀυ	:
1 75-35-4	1,1-Dichloroeth	ene	;	62.	: U	;
75-34-3	1.1-Dichloroeth	ane	!	62.	; LI	;
	1,2-Dichloroeth			62.	}1J	;
	Chloroform			62.	ŧυ	:
107-06-2	1,2-Dichloroeth	ane	<b>:</b>	62.	ŧυ	- 1
1 78-93-3	2-Butanone			120.	١U	:
1 71-55-6	1,1,1-Trichloro	ethane		62.	١U	;
	Carbon Tetrachile			62.	١U	- 1
108-05-4	Vinyl Acetate _		:	120.	١U	:
75-27-4	Bromodichlorome	thane	1	€2.	: U	+
1 78-87-5	1,2-Dichloropro	pane	:	62.	١U	:
110061-01-5	cis-1,3-Dichlore	opropene	:	62.	: U	;
79-01-6	Trichloroethene			81. 52	<del>+U</del>	;
124-48-1	Dibromochlorome	thane	P .	62.	ΙU	1
1 /9-00-5	1,1,2-irichloro	etnane		9/1/41 62.	١U	:
1 71-43-2	Benzene Trans-1,3-Dichlo		;	.62.	! U	:
110061-02-6	Trans-1,3-Dichl	propropene	:	62.	ŀυ	;
75-25-2	Bromoform			62.	: U	;
108-10-1	4-Methyl-2-Penta	anone	;	, 120.	ΙU	:
591-78-6	2-Hexanone		;	120.	; U	:
127-18-4	Tetrachloroethe	ne	;	1900.	1	;
1 79-34-5	1,1,2,2-Tetrach	loroethane	:	€2.	! U	;
1 108-88-3	Toluene		;	62.	: U	:
108-90-7	Chlorobenzene _		!	62.	١U	;
100-41-4	Ethylbenzene		;	€2.	; U	:
1 100-42-5	Styrene		;	62.	; U	;
1330-20-7	Xylene(total)		;	62.	;U	;
!			!		-	;

**METERU** 

Lab Name: PACE Contract:

SAS No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3569.000029

0.4 5. (g/mL) ML Sample wt/vol: Ca E 2/1/91

Lab File ID: G3081

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACk

Dilution Factor: 12.50

		CONCENTRATIO	ON UNITS:	
CAS NO.	COMPOUND	(ug/L or ug	/Kg) UG/L	۵
!			!	
1 74-87-3	Chloromethane		120.	; U
1 74-83-9	Bromomethane		120.	١U
1 75-01-4	Vinyl Chloride	•	120.	; U
1 75-00-3	Chloroethane		120.	! U
1 75-09-2	Methylene Chlc	ride	1 62.	١u
: 67-64-1	Acetone		120.	: U
; /5-15-0	Carbon Disulti	đe	62.	: U
1 75-35-4	1,1-Dichloroet	hene	62.	١U
1 75-34-3	1,1-Dichloroet	hane	62.	۱U
540-59-0	1.2-Dichloroet	hene (total)	62.	: U
1 67-66-3,	Chloroform		62.	: U
1 107-06-2	1.2-Dichloroet	hane	62.	: U
1 78-93-3	2-Butanone		120.	: U
: 71-55-6	1,1.1-Trichlor	oethane	62.	: U
: 56-23-5	Carbon Tetrach	loride	62.	: U
108-05-4	Vinyl Acetate		120.	ŀυ
75-27-4	Bromodichlorom	ethane	62.	: U
1 78-87-5	1,2-Dichloropr	opane	62.	: U
10061-01-5	cıs-1,3-Dichlo	ropropene ::	62.	: U
79-01-6	Trichĺoroethen	e	7662.	<del>++}</del>
124-48-1	Dibromochlorom	ethane:	62.	; U
79-00-5	1,1,2-Trichlor	oethane	CAE 52.	: U
71-43-2	Benzene		7/1/41 62.	; U
10061-02-6	Trans-1,3-Dich	loropropene:	62.	¦ U
75-25-2	Bromoform		62.	ŀυ
108-10-1	4-Methyl-2-Pen	tanone!	120.	; (J
591 <i>-</i> 78 <i>-</i> 6	2-Hexanone	;	120.	: U
127-18-4	Tetrachloroeth	ene	1800.	1
	1,1,2,2-Tetrac		62.	! ប
	Toluene			١U
108-90-7	Chlorobenzene		62.	: U
100-41-4	Ethylbenzene		62.	:U
100-42-5	Styrene		62.	: U
1330-20-7	Xvlene(total)		62.	; I)
		;		_ '

## VDI TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

: VG16FB

Lab Name: PACE Contract:

Matrix: (soil/water) WATER

Lab Sample ID: 3572.0 000**35** 

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3077

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pach/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug	I/kā) NG/F	Ω	
!		1		<del></del> ;
74-87-3	Chloromethane	10.	: U	i
74-83-9	Bromomethane	10.	!U	1
75-01-4	Vinyl Chloride	10.	١U	ŀ
75-00-3	Chloroethane	10.	!U	- }
75-09-2	Methylene Chloride	5.	:U	;
67-64-1	Acetone	10.	! U	;
75-15-0	Carbon Disulfide	5.	: U	;
1 75-35-4	1,1-Dichloroethene	5.	١U	;
1 75-34-3	1,1-Dichloroethane	; 5.	¦ U	;
540-59-0	1.2-Dichloroethene (total)	. 5.	!U	;
<i>67-66-3</i>	Chloroform	<b>5.</b> ·	: U	;
107-06-2	1,2-Dichloroethane	5.	! U	;
: 78-93-3	2-Butanone	10.	: U	†
71-55-6	1,1,1-Trichloroethane	5.	:U	1
56-23-5	Carbon Tetrachloride	: 5.	! U	1
108-05-4	Vinyl Acetate	10.	: U	1
1 75-27-4	Bromodichloromethane	5.	:U	1
1 78-87-5	1,2-Dichloropropane	: 5.	١U	;
110061-01-5	cis-1,3-Dichloropropene	: 5.	:U	;
79-01-6	Trichloroethene	: 5.	: U	1
124-48-1	Dibromochloromethane	· 5.	١U	;
1 79-00-5	1,1,2-Trichloroethane	1 5.	١U	:
71-43-2	Benzene	5.	; U	1
110061-02-6	Trans-1,3-Dichloropropene _	5.	: U	;
	Bromoform	: 5.	١U	:
108-10-1	4-Methyl-2-Pentanone	; 10.	: U	;
1 591-78-6	2-Hexanone	10.	l U	1
127-18-4	Tetrachloroethene	5.	:U	;
79-34-5	1,1,2,2-Tetrachloroethane	! 5.	! U	!
108-88-3	Toluene	5.	¦ U	1
108-90-7	Chlorobenzene	5.	; U	;
100-41-4	Ethylbenzene	: 5.	; U	:
100-42-5	Styrene	5.	: U	1
1330-20-7	Xylene(total)	5.	: U	1
!		!	:	- 1

## ЗΑ WATER VOL TILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE TOVERY

Lab Name: PACE

Contract:

00012

SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: VG16

M/ 6/18/41

1	1	SPIKE ADDED			ONCENTRATION		
: COMPOUND	•	(UG/L )	. i	(UG/L )	· <del>-</del>		C #! REC. !
: 1,1-Dichloroethene : Trichloroethene : Benzene : Toluene : Chlorobenzene		625. 625. 625. 625.	:	0.	598.   984  <i>1</i>  91 731.   921.   857.	96. <del>117</del> . 147.	161-145 106[71-120] *[76-127] *[76-125]

1,1-Dichloroethene   625	5. :		,	^	6 U			
Trichloroethene   625   Benzene   625   Toluene   625	5.   5.   5.   5.	674. 748. 979. 979. 712.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	108. <sup>5</sup> 157. 157. 114.	29: *:	÷.3 6.	1 1	61-145   71-120   76-127   76-125   75-130

# Column to be used to flag recovery and RPD values with an asterish

\* Values outside of OC limits

RPD:  $\theta \downarrow$  out of 5 outside limits Spile Recovery: 4 out of 10 outside limits

COMMENTS:

FORM III VOA-1

1/87 Rev.



## DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

AREAL SAMPLING

VOLATILES ANALYSES DATA

Samples Collected 5/15/91

Chemical Analyses Performed By
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### EXECUTIVE SUMMARY

Vinyl chloride, total 1,2-dichloroethene, tetrachloroethene, and trichloroethene were the only target compound list (TCL) compounds detected. Positive results and detection limits for aromatic compounds were estimated due to holding time violations.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Case Narrative

Eight groundwater samples were collected and submitted to PACE, Inc. on May 15, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
G01DB	3578	05/15/91
TBA	3574	05/15/91
UC72	3576	05/15/91
UC112	3580	05/15/91
UC141	3573	05/15/91
UC145	3575	05/15/91
UC223	3577	05/15/91
UG12	3579	05/15/91



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

Since the samples were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, positive results and detection limits for aromatic compounds were estimated.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

### A. Initial

Initial calibration criteria were met with the exception of the for 2-butanone (RRF 0.03-criteria 0.1). Detection limits were rejected.

## B. Continuing

Continuing calibration criteria not met are summarized below.

<u>Date</u>	<u>Time</u>	Compound	<u>rf</u>	<u>%D</u>	
5/23	14:43	2-Butanone	0.015	(0.10)	
				50.8	(25)
		Bromoform		26.0	(25)
		Vinyl acetate		28.0	(25)
5/24	11:56	2-Butanone	0.019	(0.10)	
				34.4	(25)
		Vinyl acetate		31.2	(25)
		cis-1,3-Dichlo	roprope	ene 41.3	(25)
5/25	9:37	Bromomethane		29.6	(25)
•		Chloroethane		27.9	(25)
		2-Butanone	0.015	(0.1)	
				48.7	(25)
		Vinyl acetate		37.8	(25)
		Bromoform		32.1	(25)

<u>Date</u>	<u>Time</u>	Compound	<u>RF</u>	
5/27	21:50	Acetone 2-Butanone	0.024	43.0 (25) (0.1)
				` 43.9 (25)

## () Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were acceptable.

### IV. Blanks

No contamination was found in the trip blank. Acetone was detected in VBLK 01 at 5 ppb and VBLK 03 at 7 ppb. Trichloro-ethene was detected in VBLK 04 at 3 ppb. Acetone in UC233 was qualified as less than the reported value (U).

## V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

No matrix spike/duplicate matrix spike were analyzed.

### VII. Field Duplicates

No field duplicate was sampled or analyzed.

### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

### IX. TCL Compound Identification

Target compounds were properly identified.

### X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.



## XI. Tentatively Identified Compounds

No TICs were detected.

## XII. System Performance

System performance was acceptable.

### XIII. Overall Assessment of Data for a Case

Detection limits for 2-butanone were rejected. Detection limits for aromatic compounds were estimated.

Although no field duplicate and matrix spike/matrix spike duplicate data were reported, the surrogate recoveries and internal area counts indicate adequate sample analyses. The end user of the data should be cautious when using this data since complete quality control data were not avaliable.

FPA SAMPLE NO.

Lab Name: PACE Contract: : \_\_\_\_\_\_\_\_:

Matrix: (soil/water) WATER Lab Sample ID: 3578.9

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3113

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/25/91

Column: (pack/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS:

CAC NO	COMPOUND	CONCENTRATION OF		
CAS NO.	COMPOUND	(ug/L or ug/kg)	UG/L	 
74-87-3	Chloromethane	:	100.	; ; U
74-83-9	Bromomethane		100.	. –
75-01-4	Vinyl Chloride_		100.	. –
75-00-3	Chloroethane		100.	
75-09-2	Methylene Chlori	de	50.	10
67-64-1	Acetone		100.	ΙÜ
75-15-0	Carbon Disulfide	!	50.	ΙU
75-35-4	1,1-Dichloroethe	ne ;	50.	٠U
75-34-3	1,1-Dichloroetha	ne ¦	50.	١Ü
540-59-0	1.2-Dichloroethe	ne (total) ;	50.	١U
67 <b>-</b> 66-3	Chloroform	:	50.	١U
107-06-2	1.2-Dichloroetha	ne ¦	50.	:U
78-93-3	2-Butanone	;	100.	M
71-55-6	1,1,1-Trichloroe	thane:	50.	ΙU
56-23-5 <b>-</b>	Carbon Tetrachlor	ride!	50.	١U
108-05-4	Vinyl Acetate	:	100.	١U
75-27-4	Bromodichloromet	rane¦	50.	١U
78 <i>-</i> 87 <i>-</i> 5	1,2-Dichloropropa	ane!	50.	١U
10061-01-5	cis-1,3-Dichlorop	propene :	50.	١U
79-01 <b>-6</b> -	Trichloroethene		50.	ΙU
124-48-1	Dibromochlorometh	nane!	50.	: 🖰
79-00-5	1,1,2-Trichloroet	hane!	50.	ļυ
71-43-2	Benzene	!	50.	105
.0061-02-6	Trans-1,3-Dichlor	opropene :	50.	١U
75-25-2	Bromoform	i	50.	: U
108-10-1	4-Methyl-2-Pentar	ione ;	100.	١U
591-78-6	2-Hexanone		100.	ΙU
127-18-4	Tetrachloroethene	·	1000.	;
79-34-5	1,1,2,2-Tetrachlo	roethane!	50.	ΙU
108-88-3	Toluene		50.	:n 2
108-90-7	Chlorobenzene		50.	:0
100-41-4	Ethylbenzene	i	50.	:0
400 40 -	Styrene	!	50.	:0
100-42-5	Xylene(total)	'	50.	iu L

## VOLATILE ORGANICS ANALYSIS DATA SHEET T JATIVELY IDENTIFIED COMPOUNDS

GO1DB

EPA SAMPLE NO.

Lab Name: PACE

Contract:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3578.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3113

Level: (low/med) LOW

Date Received: 5/16/91

! Moisture: not dec.100.

Date Analyzed: 5/25/91

.Column: (pach/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS:

				CONCENTRATION UNITS:
Number	TICs	found:	Ō	(ug/L or ug/kg) UG/L

CAS NUMBER	COLL COMP MALIE	   RT !======	: : EST. CONC.	: 0 :
				·
3				:;
6				;;
8				
10			·	
12.				
14  15				
17;_				
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23  24				
. 26				
18				

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# VOL ILE ORGANICS ANALYSIS DATA SHEET

TBA

FPA SAMPLE NO.

Lab Name: PACE Contract:

1--0002<del>-9</del>-----1

Lab Sample ID: 3574.6

Matrix: (soil/water) WATER

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63078

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION	UNITS:
---------------	--------

CAS NO.	COMPOUND		or ug/kg)		1
;					;
1 74-87-3	Chloromethane		:	10.	١U
1 74-83-9	Bromomethane		!	10.	١U
75-01-4	Vinyl Chloride			10.	١U
1 75-00-3	Chloroethane		:	10.	: U
1 75-09-2	Methylene Chlc	rıde	!	5.	ŀU
67-64-1	Acetone			10.	١U
75-15-0	Carbon Disulfi	de	:	5.	ŧυ
1 75-35-4	1,1-Dichloroet	hene	;	5.	; U
! 75-34 <b>-</b> 3	1,1-Dichloroet	hane	:	5.	: U
540-59-0	1,2-Dichloroet	hene (tota	al) :	5.	ŧυ
67 <i>-</i> 66 <i>-</i> 3	Chloroform		!	5.	١U
107-06-2	1.2-Dichloroet	hane	1	5.	:U
78-93-3	2-Butanone			10.	LL R
71 -55 -6	1,1,1-Trichlor	oethane _	1	<sub>2</sub> 5.	- ¦∪ <b>'</b> `
56-23-5	Carbon Tetrach	loride	:	5.	١U
108-05-4	Vinyl Acetate		:	10.	; U
75-27-4	Bromodichlorom	ethane	;	5.	÷υ
78 -87 <b>-5</b> -	1.2-Dichloropr	opane	;	5.	١U
10061-01-5	cis-1,3-Dichlo	ropropene	;	5.	ΙU
79-01-6	Trichloroethen			5.	: U
124-48-1	Dibromochlorome	ethane	;	5.	ŧŪ
79-00-5	1,1,2-Trichlore	ethane		5.	ΙU
71-43-2				5.	105
10061-02-6	Trans-1.3-Dich	loroproper	ne :	5.	10 3
75-25-2	Bromoform			5.	ΙŪ
108-10-1	4-Methy1-2-Pent	anone		10.	: U
591-78-6	2-Hexanone			10.	l U
127-18-4	Tetrachloroethe	ne		5.	: U
	1,1,2,2-Tetrach			5.	١U
	Toluene			5.	:n2
108-90-7	Chlorobenzene		;	5.	;U ,
100-41-4	Ethylbenzene		;	5.	:0 (
100-47-5	Styrene		!	5.	U
1330-20-7	Xylene(total) _		;	5.	ΙŪΙ
1000 10 /	Ayrene, codar, _		;	٠.	مهد ت

## 1E VOLATILE ORGANICS ANALYSIS DATA SHEET

T FATIVELY IDENTIFIED COMPOUNDS TBA

Lab Name: PACE Contract:

00030 SDG No.: 

Matrix: (soil/water) WATER Lab Sample ID: 3574.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63078

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/23/91

, Column: (pack/cap) PACk Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

,				<del>-</del>	<del></del> .
, ,	AS NUMBER	COMPOUND NAME	RT	: EST. CONC.	: a :
! = = =	:============	!======================================		! ===========	!====!
! 1		!	;	!	!
-	*	i !	,	'	!:
: 3			- ,	!	;;
: 4	·			;	``
5	•			,	;;
1 6				!	
: 7					
: 8					,
: 9			_,	·	1
10	• ;		_ ,		!:
11	• :				
1 12	•;		_ ,		!;
13	;		_		
14			_ ; ;		
. 15	:				! ;
16	[		_		
17.					
18	·				
19.	!				
20.	1				!
21.			1 1		
22.	!		.::	;	!
23.			11		:
24.	1		_	;	!
25.			_	;	:
26.	!		.;;	;	
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28.					
29.	;				

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EPA SAMPLE NO.

## VOL ILE ORGANICS ANALYSIS DATA SHEET

: UC72

FPA SAMPLE NO.

Lab Name: PACE

Contract:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3576.2

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3089

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Dolumn: (pack/cap) PACK

Dilution Factor: 330.00

CONCE	VTRATI	ט אס:	NITS:
(ua/l	OF HO	1/ka)	11671

CAS NO.	COMPOUND (ug/L or	ug/kg> UG/L	Ω
;			
1 74-87-3	Chloromethane	<u></u> ! 3300.	: U :
1 74-83-9	Bromomethane	; 3300.	:υ :
1 75-01-4	Vinyl Chloride	3300.	; U ;
1 75-00-3	Chloroethane	3300.	: U :
1 75-09-2	Methylene Chloride	1700.	: 0
67-64-1	Acetone Carbon Disulfide	; 3300.	: U :
75-15-0	Carbon Disulfide	1700.	: 0 :
1 75-35-4	1,1-Dichloroethene	1700.	; U ;
1 75-34-3	1,1-Dichloroethane	1700.	; U ;
1 540-59-0	1,2-Dichloroethene (total)	: 1700.	; U ;
: 67-66-3 <b></b> -	Chloroform	1700.	: U :
1 107-06-2	1,2-Dichloroethane		U _
: 78- <del>9</del> 3-3	2-Butanone	3300.	HR:
: 71-55-6	1.1,1-Trichloroethane	1700.	: `` ט :
: 56-23-5	Carbon Tetrachloride	1700.	: U :
108-05-4	Vinyl Acetate	3300.	:U :
<b>フラーごフーチーー</b>	Bromodichloromethane	: 1700.	: U :
78 <b>-</b> 87 -5 - <b>-</b> -	1,2-Dichloropropane	1700.	: U :
10061-01-5	cis-1,3-Dichloropropene	1 1700.	:U :
79-01-6	Trichloroethene	1700.	:U :
124-48-1	Dibromochloromethane	1700.	: U :
79-00-5	1,1,2-Trichloroethane	1700.	:U :
71-43-2	Benzene	1700.	: 17
10061-02-6	Trans-1,3-Dichloropropene	1700.	וט ו
75-25-2	Bromoform		: U :
	4-Methyl-2-Pentanone	3300.	:U :
591-78-6	2-Hexanone	3300.	: 0
127-18-4	Tetrachloroethene	23000.	1
	1,1,2,2-Tetrachloroethane		iu i
	Toluene		IUJ !
108-90-7	Chlorobenzene	1700.	: 0,
100-41-4	Ethylbenzene	1700.	υ\
100-42-5	Styrene	1700.	· U \
1330-20-7	Xylene(total)	1700.	الل
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#### 1 E VOLATILE ORGANICS ANALYSIS DATA SHEET T FATIVELY IDENTIFIED COMPOUNDS

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	V-2.Y-	;

Lab Name: PACE

Contract:

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EPA SAMPLE NO.

SDG No.:

Matrik: (soil/water) WATER

Lab Sample ID: 3576.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3089

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACk

Number TICs found: 0

Dilution Factor: 330.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

: CAS NUMBER	COMPOUND NAME	 : : RT	: : EST. CONC.	; Q
1.			<b>!</b>	1 1
: 2				; ;
: 3:		,		!:
1 41		!		!;
5				!!
				!!
				! <u> </u>
9				:
11.	i			<u> </u>
12				'
10				
1.1				
1 = 1		,		
16:		!		;
17!		!		
18;				
19		!	!	!
			!	:
21.				
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	i			;
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		:	!	;

FORM I VOA-TIC

#### 1A VOL .LE ORGANICS ANALYSIS DATA SHEET

UC112 :

FPA SAMPLE NO.

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3580.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3154

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/28/91

Column: (pack/cap) PACk Dilution Factor: 20.00

CAS NO.	СОМРОИИД			nā∖kā) ALION N		Ω
1	C+1			1	000	
, /4-8/-3	Chloromethane _			¦	200. 200.	: U :
74-03-3	Bromomethane			;		10 1
1 75-00-2	Vinyl Chloride_ Chloroethane			;	200. 200.	
- 75-00-3 - 75-09-3	Methylene Chlor			:	100.	
! 67-64-1	Acetone	106		· <u>'</u>	200.	; U ;
1 75-15-0	Carbon Disulfid			·;	100.	:0 :
1 75-35-4	1,1-Dichloroeth			· <u>'</u>	100.	10 :
1 75-34-3	1,1-Dichloroeth	ane		'	100.	10 1
: 540-59-0	1,2-Dichloroeth	ene (tot	ر 1 د	:	100.	:0 :
. 67-66-3	Chloroform			;	100.	:0 :
107-06-0	1,2-Dichloroeth			:	100.	:0 :
78-93-3	2-Butanone			;	200.	WR:
71-55-6	1,1,1-Trichloro	 ethane		;	100.	iu '
56-23-5	Carbon Tetrachl	oride		;	100.	iu i
108-05-4	Vinyl Acetate _			;	200.	i U
1 75-27-4	Bromodichlorome	thane		!	100.	:U :
1 78-87-5	1,2-Dichloroprop	pane		;	100.	: U
110061-01-5	cis-1,3-Dichlord	propene		:	100.	ιυ :
1 79-01-6	Trichloroethene			;	270.	:
1 124-48-1	Dibromochloromet	hane		:	100.	:U :
1 79-00-5	1,1,2-Trichloroe	thane		;	100.	:U :
1 71-43-2	Benzene				100.	: Zu:
10061-02-6	Trans-1,3-Dichlo	roproper	ne		100.	10 1
75-25-2	Bromoform				100.	:U :
108-10-1	4-Methv1-2-Penta	inone		1	200.	:U :
591-78-6	2-Hexanone			:	200.	; U ;
127-18-4	Tetrachloroether	e		;	1700.	(F)
79-34-5	1,1,2,2-Tetrachl	oroethan	e _		100.	:U :
108-88-3	Toluene				100.	: Tu:
108-90-7	Chlorobenzene				100.	ΙU1 Ι
100-41-4	Ethylbenzene				100.	:U :
100-42-5	Styrene			;	100.	:⊔\ :
1330-20-7	Xylene(total)			;	100.	: UL :
				:		1 :

#### 1 E VOLATILE ORGANICS ANALYSIS DATA SHEET T FATIVELY IDENTIFIED COMPOUNDS

UC112

EPA SAMPLE NO.

Lab Name: PACE

Contract:

SDG No.: 

00042

Matrix: (soil/water) WATER

Lab Sample ID: 3580.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3154

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pach/cap) PACK

Dilution Factor: 20.00

# CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

1.
3.
4.         5.         6.         7.         8.         9.         10.         11.         12.         13.         14.         15.         16.         17.         18.         19.
5.       6.         7.       8.         9.       9.         10.       9.         11.       9.         12.       9.         13.       9.         14.       9.         15.       9.         16.       9.         17.       9.         18.       9.         19.       9.
6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18.
7.
8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 19.
10. 11. 12. 13. 14. 15. 16. 17. 18.
11. 12. 13. 14. 15. 15. 16. 17. 18.
12. 13. 14. 15. 16. 17. 18.
13. 14. 15. 16. 17. 18.
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FORM I VOA-TIC

#### 1A VOL ILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3573.8

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63115

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/25/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND	(ug/L or	ug/Kg) UG/L	۵
: 74-87-3Chloromet	hane	: 10.	: U:
: 74-83-9Bromometh	ane	! 10.	; U ;
1 75-01-4Vinyl Chl	orıde	10.	: U :
: 75-00-3Chloroeth	ane	: 10.	: U :
: 75-09-2Methylene	Chloride	: 5.	: U :
: 67-64-1Acetone _		10.	Ιυ :
: 75-15-0Carbon Dis	sulfide	5.	:U :
1 75-35-41,1-Dichle	oroethene	: 5.	:U :
1 75-34-31,1-Dichle	proethane	4.	; J ;
1 540-59-01,2-Dichle			;
: 67-66-3Chloroford	n	! 5.	:U :
1 107-06-21,2-Dichle	proethane	; 5.	:U _ :
1 78-93-32-Butanone	2	_ : 10.	WR:
71-55-61,1,1-Tric	:hloroethane	; 5.	J
: 56-23-5Carbon Tet	rachloride	÷ 5.	:ប :
108-05-4Vinyl Acet	ate	: 10.	ιυ :
1 75-27-4Bromodich]	oromethane	; 5.	:U :
78-87-51,2-Dichlo	ropropane	_; 5.	:U :
110061-01-5cis-1.3-Di	chloropropene	: 5.	:U :
: 79-01-6Trichloros	thene	_; 5.	; J ;
1 124-48-1Dibromochl	oromethane	; 5 <b>.</b>	:U :
79-00-51,1,2-Tric	hloroethane	_; 5 <b>.</b>	:U :
71-43-2Benzene		5.	:U <b>J</b> :
10061-02-6Trans-1.3-	Dichloropropene	_; 5 <b>.</b>	:U :
: 75-25-2Bromoform		_; 5.	:U :
108-10-14-Methyl-2	-Pentanone	10.	: U :
591-78-62-Hexanone		_; 10.	:U :
127-18-4Tetrachlor	oethene	[10.	1
79-34-51,1,2,2-Te	trachloroethane _	_; 5.	ΙU ;
108-88-3Toluene	<del>_</del>	_; 8.	: J :
108-90-7Chlorobenz	ene	_; 5.	:01:
100-41-4Ethylbenze	ne	_; 5.	:U / :
100-42-5Styrene		_; 5.	1UL :
1330-20-7Xylene(tot	al)	_; 3.	J
		_	11

#### 1 E VOLATILE ORGANICS ANALYSIS DATA SHEET T SATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. UC141

Lab Name: PACE

Contract:

SDG No.:

00050

Matrix: (soil/water) WATER

Lab Sample ID: 3573.8

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3115

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Column: (pack/cap) PACK

Date Analyzed: 5/25/91

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

		 		1
: CAS NUMBER	COMPOUND NAME	RT		: α :
1.		; ======= !	; ========== !	; ====;
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4		!		!!
5				!:
7				
8				!!
9		,		<u> </u>
11		' <u>'</u>		!!
12.				'
13				
14		!		
16;	i	;		! }
				;
18;		;		
19;			!	!
20		;		;
			'	;
				;
24	(	1		:
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FORM I VOA-TIC

UC145

Lab Name: PACE Contract:

-----500561

Matrix: (soil/water) WATER Lab Sample ID: 3575.4

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3109

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/24/91

Column: (pack/cap) PACk Dilution Factor: 1.00

CAS NO.	COMPOUND		ation Unit ug/kg) UG		α
74-83-9 75-01-4 75-09-2 75-09-2 75-09-2 75-15-0 75-35-4 75-35-4 75-34-3 75-66-3 76-66-3 76-66-3 76-23-5 78-93-3 78-93-3 78-87-5 78-87-5 79-01-6 108-10-1 108-10-1 108-88-3 108-90-7 100-41-4 100-42-5	ChloromethaneBromomethaneBromomethaneChloroethaneChloroethaneCarbon Disulfice1,1-Dichloroethe1,2-Dichloroethe1,2-DichloroetheCarbon TetrachleCarbon TetrachleCarbon TetrachleCarbon TetrachleI,2-Dichlorome1,2-Dichlorome1,2-Dichlorome1,2-Dichlorome1,2-Dichlorome1,2-Dichlorome	eneane ethane oride thane opropene thane_ethane oropropene		10. 10. 10. 10. 10. 10. 10. 10. 10. 10.	
					1

# VOLATILE ORGANICS ANALYSIS DATA SHEET T FATIVELY IDENTIFIED COMPOUNDS

UC	1	4	٤
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Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00062

EPA SAMPLE NO.

Matrix: (soil/water) WATER

Lab Sample ID: 3575.4

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63109

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACk

Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

Number TICs found	d: O (ug/L or ug/kg) UG/L			
: CAS NUMBER	COMPOUND NAME		EST. CONC.	; Q ;
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; 19;_				
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FORM I VOA-TIC

FPA SAMPLE NO.

00233

Lab Name: PACE Contract:

700067

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3577.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3114

Level: (low/med) LOW Date Received: 5/16/91

Moisture: not dec.100. Date Analyzed: 5/25/91

Column: (pach/cap) PACk Dilution Factor: 1.00

		CONCENTRATION	UNITS:		
CAS NO.	COMPOUND	(ug/L or ug/k	.g) UG/L	α	
					<u></u>
:		<b>;</b>		;	1
1 74-87-3	Chloromethane		10.		;
1 74-83-9	Bromomethane		10.	١u	;
1 75-01-4	Vinyl Chloride		10.	١U	1
1 75-00-3	Chloroethane		10.	١u	:
1 75-09-2	Methylene Chlor	ride	5.	;U	1
67-64-1	Acetone		-1	<del></del>	110 1
1 75-15-0	Carbon Disulfic	ie	5.	¦U	:
1 75-35-4	1,1-Dichloroeth	rene!	5.	١U	;
1 75-34-3	1,1-Dichloroeth	ane:	5.	١U	;
	1.2-Dichloroeth		5.	:u	:
: 67-66-3	Chloroform	;	5. <sup>-</sup>	١U	:
107-06-2	1,2-Dichloroeth	ane:	5.	١٠ _	:
1 78-93-3	2-Butanone	!	10.	WR	:
1 71-55-6	1,1,1-Trichloro	ethane!	5.	ŀU	1
: 56-23-5	Carbon Tetrachl	oride :	5.	: U	;
108-05-4	Vinyl Acetate _	!	10.	: U	1
: 75-27-4	Bromodichlorome	thane!	5.	: U	:
78-87-5	1,2-Dichloropro	pane !	5.	: U	!
:10061-01-5	cis-Ì,3-Dichlor	opropene :	5.	: U	;
79-01-6	Trichloroethene		5.	;U	:
124-48-1	Dibromochlorome	thane:	5.	:ប	1
79-00-5	1,1,2-Trichloro	ethane :	5.	10	1
71-43-2	Benzene	:	5.	7,U:	1
10061-02-6	Benzene Trans-1,3-Dichl	oropropene:	5.	; u <b>"</b>	;
75-25-2	Bromoform	:	5.	: U	1
108-10-1	4-Methy1-2-Penta	anone¦	10.	١U	}
	2-Hexanone		10.	; U	:
127-18-4	Tetrachloroether	ne	5.	١U	;
	1,1,2,2-Tetrach		5.	:U	:
108-88-3	Toluene	1	15.	: 5	<b>!</b>
108-90-7	Chlorobenzene		5.	:u j	1
100-41-4	Ethylbenzene		5.	: 10	) )
100-42-5	Styrene		5.	;U	<b>;</b>
1330-20-7	Xylene(total)		5.	:u_	}
	·	· · · ·			1

# VOLATILE ORGANICS ANALYSIS DATA SHEET

T TATIVELY IDENTIFIED COMPOUNDS

EPA	SAMPLE	NO.
UCI	133	
		1

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG Nov 0 6

Matrix: (soil/water) WATER Lab Sample ID: 3577.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63114

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/25/91

Column: (pack/cap) PACk Dilution Factor: 1.00

# CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	: : : RT	EST. CONC.	
1				;;
2				!!
4			'	`
5			1	!!
7				;;
8				!!
9				'
11				!!
, 12    13				
14!		!		!!
1 1/-				
17				
' 20		,		
··· ~ >		:		
. 23				
*c- ı		!		
26				
27		,	!	!
		,		
		'.	'	'

FORM I VOA-TIC

#### 1A VOL. ILE ORGANICS ANALYSIS DATA SHEET

UG12
Lab Name: PACE

Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3579.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3122

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/25/91

Column: (pack/cap) PACK Dilution Factor: 2.50

		CONCENTRATI	ON UNITS:	
CAS NO.	COMPOUND	(ug/L or ug	ı/Kg) UG/L	Ω
!			·	;
! 74-87-3	Chloromethane		25.	
1 74-83-9	Bromomethane		25.	
1 75-01-4	Vinyl Chloride		110.	
75-00-3	Chloroethane		25.	iu
: 75-09-2	Methylene Chlor	1de	12.	:0 :
67-64-1	Acetone		25.	Ü
75-15-0	Carbon Disulfid	e	12.	i U
: 75-35-4	1,1-Dichloroeth	ene	12.	:U :
1 75-34-3	1,1-Dichloroeth	ane	12.	:U :
: 540-59-0	1,2-Dichloroeth	ene (total)	260.	: :
: 67-66-3	Chloroform		12.1	: U:
107-06-2	1,2-Dichloroeth	ane	12.	10 _ 1
: 78-93-3	2-Butanone		: 25.	WR:
1 71-55-6	1.1,1-Trichloro	ethane	12.	וט י
: 56-23-5	Carbon Tetrachl	orıde	12.	: U :
108-05-4	Vinyl Acetate _		1 25.	:u :
1 75-27-4	Bromodichlorome	thane	12.	: U:
1 78-87-5	1,2-Dichloropro	pane	12.	: U:
110061-01-5	cis-1.3-Dichlore	ppropene	12.	:0 :
1 79-01-6	Trichloroethene		120.	1 1
124-48-1	Dibromochlorome	thane	12.	: U :
1 79-00-5	1,1,2-Trichloro	ethane	12.	: :
71-43-2	Benzene	:	12.	105 1
10061-02-6	Trans-1,3-Dichlo	propropene :	12.	:U :
	Bromoform		12.	:0 :
108-10-1	4-Methyl-2-Penta	anone	25.	រប :
591 <i>-</i> 78-6	2-Hexanone		25.	:U :
127-18-4	Tetrachloroether	ne	12.	:U :
	1,1,2,2-Tetrachl			: U :
108-88-3	Toluene	;	12.	:UJ :
108-90-7	Chlorobenzene		12.	:U ; :
100-41-4	Ethylbenzene		12.	: U :
100-42-5	Styrene	!	12.	:U
1330-20-7	Styrene	!	12.	1U+ ;
		!		- ' ;

TPA SAMPLE NO.

# VOLATILE ORGANICS ANALYSIS DATA SHEET

T TATIVELY IDENTIFIED COMPOUNDS

;	
:	UG12
i	

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 0075

Matrix: (soil/water) WATER

Lab Sample ID: 3579.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3122

Date Received: 5/16/91

Level: (low/med) LOW

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pach/cap) PACK

Dilution Factor: 2.50

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

		:		<del></del> :
CAS NUMBER	COMPOUND NAME	! RT	EST. CONC.	: Q :
	====================================	; =======	; ========== ,	!====;
1		<u> </u>	;	!!
3.		' !	'	!!
1 1		'		''
5		·	·	
: 6:			,	!
71				
8				
9				!!
' 10!				
	i			
13				'
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1 4,7			;	;
17;				
18		;	!	!
		!	!	!
				!
				<u></u>
22		!	!	!
24.			'	:
25.				
26				
27				
				!
29		1		!
30		!	!	!
		'.		



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/15/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

Tetrachloroethene was the only compound detected in Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Cooler temperature for the UniFirst samples was  $12^{\circ}$  C when received inthe laboratory. Cooler temperature for the Grace samples was  $5^{\circ}$ C. Temperatures outside the  $4^{\circ}$ C  $\pm 2^{\circ}$ C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Eight treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 15, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. V131V6FS was used for the matrix spike and matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
V131V6FD	3585	05/15/91
V131V6FS	3584	05/15/91
V131V6TB	3586	05/15/91
V154V6FS	3588	05/15/91
V197V6FS	3584	05/15/91
S1-18	3595	05/15/91
S1-18TB	3597	05/15/91
S4-16	3602	05/15/91



# volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
    - V. Surrogate Recovery
  - VI. Matrix Spike/Matrix Spike Duplicate

  - VII. Field Duplicates VIII. Internal Standards Performance

    - X. Compound Quantitation and Reported Detection Limits IX. TCL Compound Identification
    - XI. Tentatively Identified Compounds
    - XII. System Performance
    - XIII. Overall Assessment



#### I. Holding Times

Since S1-18TB and S4-16 were analyzed outside the 7 day holding time for non-preserved samples but within the 14 day holding time, detection limits for aromatic compounds were estimated. All other samples were analyzed within the 7 day holding time.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met with the exception of 2-butanone which had an average RRF of 0.030 and %RSD of 39.8. The average RRF was reported as 0.033 and %RSD 31.1. Detection limits for 2-butanone were rejected.

#### B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D
5/21	7:54	2-Butanone	0.014 (0.10)	56.1 (25)
5/21	20:21	2-Butanone Acetone Chloroethene	0.020 (0.10)	33.4 (25) 31.4 (25) 27.7 (25)

#### () Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.



#### IV. Blanks

Method blanks and trip blanks were clean.

#### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

#### VII. Field Duplicates

Vinyl chloride was detected in the sample at 400 ppb, the field duplicate at 490 ppb, in the MS at 440 ppb, and in the MSD at 450 ppb (%RSD 6.2). Total 1,2-dichloroethene was detected in the sample at 940 ppb, the field duplicate at 1000 ppb, in the MS at 910 ppb, and in the MSD at 900 ppb (%RSD 2.3). Trichloroethene was detected in the field sample at 490 ppb and in the duplicate at 400 ppb. The data are acceptable.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

Target compounds were properly identified.

#### X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data.

#### XI. Tentatively Identified Compounds

No TICs were detected.



#### XII. System Performance

System performance requires attention. Manual integrations should be addressed. Two samples were analyzed outside the required holding time. Response factor criteria should be monitored by the laboratory.

#### XIII. Overall Assessment of Data for a Case

All 2-butanone detection limits were rejected because of the low RF.

Aromatic compounds in Samples S1-18TB and S4-16 were qualified as estimates due to missed holding times.

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

------:
: V131V6FD

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00019

Matrix: (Soil/water) WATER Lab Sample ID: 3585.1

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3016

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/21/91

Column: (pack/cap) PACk Dilution Factor: 10.00

#### CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or	ug/kg)	UG/L	0	
1	· · · · · · · · · · · · · · · · · · ·		;		-;	- ;
1 74-87-3	Chloromethane		;	100.	١U	:
1 74-83-9	Bromomethane			100.	: U	;
1 75-01-4	Vinyl Chloride		;	490.	1	;
1 75-00-3	Chloroethane		!	100.	: U	;
	Methylene Chlori			50.	: U	1
1 67-64-1	Acetone		!	100.	; n	}
75-15-0	Carbon Disulfide		!	50.	יט	1
1 75-35-4	1,1-Dichloroethe	ne	!	50.	; U	;
: 75-34-3	1,1-Dichloroetha	ne	;	50.	: ט	;
1 540-59-0	1,2-Dichloroethe	ne (total)	;	1000.	:	;
: 67-66-3	Chloroform		;	50.	:U	{
107-06-2	1,2-Dichloroetha	ne	;	50.	; U ~	ţ
1 78-93-3	2-Butanone	~~~~~~~~~	;	140.	HP.	;
1 71-55-6	1,1,1-Trichloroe	thane	!	50.	; U	;
; 56-23-5	Carbon Tetrachlo	ride	;	50.	¦υ	;
108-05-4	Vinyl Acetate		!	100.	: U	;
1 75-27-4	Bromodichloromet	nane	{	50.	; U	i
1 78-87-5	1,2-Dichloropropa	ane	;	50.	:U	;
110061-01-5	cis-1,3-Dichlorop	propene	!	50.	; U	÷
79-01-6	Trichloroethene		;	420.	:	1
124-48-1	Dibromochlorometh	nane	!	50.	ŧυ	1
1 79-00-5	1,1,2-Trichloroet	thane		50.	١U	ì
1 71-43-2	Benzene		:	50.	:U	;
110061-02-6	Trans-1,3-Dichlor	ropropene	;	50.	١U	1
75-25-2	Bromoform		!	· 50.	: U	;
108-10-1	4-Methyl-2-Pentar	ione		100.	:U	;
591-78-6	2-Hexanone		;	100.	١U	- 1
127-18-4	Tetrachloroethene		;	50.	! U	;
	1,1,2,2-Tetrachlo			50.	10	;
108-88-3	Toluene		;	50.	:U	;
108-90-7	Chlorobenzene		!	50.	: U	:
100-41-4	Ethylbenzene		;	50.	; U	;
100-42-5	Styrene		;	50.	: U	;
1330-20-7	Xylene(total)		!	50.	!ប	;
					!	. !

#### VULATILE UKDANILS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Contract: Lab Name: PACE

V131V6FD

SDG No.:

00020

Matrix: (Soil/water) WATER

Lab Sample ID: 3585.1

Sample wt/vol: 5. (q/mL) ML

Lab File ID: 63016

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

	=======================================	: RT	: EST. CONC.	Q
1. :			!	:
		'	i	
3.		:	'	
4.		!		
		!	!	!!
<u> </u>		;	!	
				!:
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11!		!		!!
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				!!
4.*				
				!!
17				<b></b> -
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· · · · · · · · · · · · · · · · · · ·		¦		!;
70		:;		:
		''		;
24				:
25.				
26.				
- 77 I				;
- 2 <b>8</b>				;
20				:
7A .				
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1/87 Rev.

FORM I VOA-TIC

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NU. ; V131V6FS

Lab Name: PACE

Contract:

SDG No.:

Matrix: (Soil/water) WATER

Lab Sample ID: 3584.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3013

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/21/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

	 ATION UI		Ω
 	 <del></del>	 	

		CONCENTRATION		_
CAS NO.	COMPOUND	(ug/L or ug/kg	ı) UG/L	
	Chloromethane		100.	١U
74-83-9	Bromomethane		100.	ļυ
75-01-4	Vinyl Chloride		400.	;
75-00-3	Chloroethane		100.	١U
75-09-2	Methylene Chlo	ride;	50.	; U
67-64-1	Acetone		100.	:U
75-15-0	Carbon Disulfi	.de;	50.	: U
	1,1-Dichloroet		50.	; U
	1.1-Dichloroet		50.	: U
540-59-0	1,2-Dichloroet	hene (total);	940.	1
67-66-3	Chloroform	!	50.	¦ U
107-06-2	1.2-Dichloroet	:hane!	50.	HU /
78-93-3	2-Butanone		140	HA
71-55-6	1,1,1-Trichlor	oethane	50.	: U
56-23-5	Carbon Tetrach	loride	50.	١IJ
108-05-4	Vinyl Acetate		100.	١U
75-27-4	Bromodichlorom	ethane	50.	١U
78-87-5	1,2-Dichloropr	opane	50.	; U
10061-01-5	cis-1,3-Dichlo	ropropene	50.	١U
79-01-6	Trichloroether	e:	420.	;
124-48-1	Dibromochlorom	ethane	50.	ŧυ
79-00-5	1,1,2-Trichlor	oethane	50.	:U
71-43-2			50.	!U
10061-02-6	Trans-1,3-Dich	loropropene!	50.	۱u
75-25-2	Bromoform		50.	ŧυ
108-10-1~	4-Methv1-2-Pen	tanone :	100.	: ບ
591-78-6	2-Hexanone	:	100.	:υ
127-18-4	Tetrachloroeth	ene :	50.	٠U
	1,1,2,2-Tetrac		50.	; U
108-88-3	Toluene	:	50.	١U
108-90-7	Chlorobenzene		50.	ŀυ
100-41-4	Ethylbenzene		50.	:ບ
100-42-5	Styrene		50.	l U
1330-20-7	Xylene(total)		50.	:U
· ·	X	!		1

#### ANTHITTE DECEMBER WHALTOTO DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

Number TICs found: 0

SDG No.: 00028

Matrix: (SOil/water) WATER Lab Sample ID: 3584.3

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3013

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/21/91

Column: (pack/cap) PACK Dilution Factor: 10.00

> CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

COMPOUND NAME : RT : EST. CONC. : 0 1.\_\_\_\_\_|\_\_| 2.\_\_\_\_| 3.\_\_\_\_ 4.\_\_\_\_ 5.\_\_\_\_\_ 6.\_\_\_\_ 7.\_\_\_\_| 8.\_\_\_\_| 9.\_\_\_\_! 10.\_\_\_\_| 12.\_\_\_\_\_\_ 13.\_\_\_\_\_ 14.\_\_\_\_\_ 15.\_\_\_\_\_ 16.\_\_\_\_|\_\_| 17.\_\_\_\_\_ 18.\_\_\_\_ 19.\_\_\_\_\_ 21.\_\_\_\_\_|\_\_\_|\_\_\_|\_\_\_|\_\_\_\_|\_\_\_\_|\_\_\_| 22.\_\_\_\_\_ 23.\_\_\_\_\_ 24.\_\_\_\_\_|\_\_|\_\_| 25.\_\_\_\_\_\_ 26.\_\_\_\_ 29. \_\_\_\_\_ : 30.\_\_\_\_ 

FORM I VOA-TIC

EPA SAMPLE NU.

Lab Name: PACE Contract: : V131V6TB

Matrix: (soil/water) WATER

Lab Sample ID: 3586.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3025

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pach/cap) PACK

Dilution Factor: 1.00

CONCENTRATION U	JN:	ITS:
-----------------	-----	------

CAS NO.	COMPOUND	(ug/L or ug	/ra: UG/L	Ω	
			<del></del>	<del></del> -	- ;
1 74-87-3	Chloromethane		10.	¦ U	;
1 74-83-9	Bromomethane		10.	:U	1
1 75-01-4	Vinyl Chloride		10.	۱U	;
1 75-00-3	Chloroethane		10.	١U	:
1 75-09-2	Methylene Chlory	de	. <u> </u>	١U	:
67-64-1	Acetone		10.	¦U	;
; /5-15-0	Carbon Disultide		5.	١U	;
1 75-35-4	1.1-Dichloroethe	ne	5.	¦U	;
1 75-34-3	1,1-Dichloroetha	ne	5.	ŀU	:
1 540-59-0	1,2-Dichloroethe	ne (total):	5.	:U	1
1 67-66-3	Chloroform		5.	: U	;
1 107-06-2	1.2-Dichloroethad	ne :	5.	:U _	;
1 78-93-3	2-Butanone	:	JH.	HO P	;
; /1-55-6	1,1,1-Trichloroe	thane :	5.	:U	;
1 56-23-5	Carbon Tetrachlor	ride _ :	5.	:ប	:
108-05-4	Vinyl Acetate	;	10.	١U	;
: 75-27-4	Bromodichlorometh	ane:	5.	: U	:
1 78-87-5	1,2-Dichloropropa	ne:	5.	ŀU	1
110061-01-5	cis-1.3-Dichlorop	ropene :	• 5.	١U	;
: 79-01-6	Trichloroethene	;	5.	:U	;
124-48-1	Dibromochlorometh	ane	5.	:U	;
79-00-5	1,1,2-Trichloroet	:hane!	5.	! U	;
71-43-2			5.	:U	1
	Trans-1,3-Dichlor	opropene:	5.	١U	1
75-25-2	Bromoform		5.	: U	i i
108-10-1	4-Methyl-2-Pentar	ione ::	10.	١U	1
591-78-6	2-Hexanone		10.	١U	:
127-18-4	Tetrachloroethene	:	5.	١U	:
79-34-5	1,1,2,2-Tetrachlo	roethane!	5.	:U	;
108-88-3	Toluene	:	5.	; U	:
108-90-7	Chlorobenzene	:	5.	!U	;
100-41-4	Ethylbenzene		5.	!U	1
100-42-5	Styrene		5.	:U	;
1330-20-7	Xylene(total)		5.	:U	:
		1		!	:

#### ANTWALLER REPUBLIES WINNELDED DULM DUEEL TENTATIVELY IDENTIFIED COMPOUNDS

V131VETB

Lab Name: PACE Contract:

SDG No. 00036 

Matri4: (Soil/water) WATER Lab Sample ID: 3586.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63025

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/22/91

Column: (pack/cap) PACk Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

		<del></del>	:	
CAS NUMBER		: RT	: EST. CONC.	: 0 :
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FORM I VOA-TIC

\_\_\_\_\_

Lab Name: PACE Contract:

V134V6F5

Lab Code: PACE Case No.: EPC SAS No.: SDG NQ.0.040

Matrix: (Soil/water) WATER Lab Sample ID: 3588.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3027

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/22/91

\*Column: (pack/cap) PACK Dilution Factor: 5.00

#### CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or t	rā\kā) NG\r	Q	
1				- ;
1 74-87-3	Chloromethane	_: 50.	¦ U	:
74-83-9	Bromomethane	_: 50.	: U	1
75-01-4	Vinyl Chloride	50.	: U	;
75-00-3	Chloroethane	_  50.	١u	1
75-09-2	Methylene Chloride	1 25.	: ប	;
: 67-64-1	Acetone	_; 50.	:ប	1
75-15-0	Acetone Carbon Disulfide	_1 25.	:υ	-
: 75-35-4	1.1-Dichloroethene	_; 25.	:u	:
1 75-34-3	1.1-Dichloroethane	_; 25.	; U	;
1 540-59-0	1,2-Dichloroethene (total)_	_1 470.	:	;
1 67-66-3	Chloroform	_: 25.	: ប	:
107-06-2	1.D-Dichloroethane	_; 25.	ιυ ,	;
1 78-93-3	2-Butanone	ූ! හර.	+UR	;
1 71-55-6	1,1,1-Trichloroethane	_; 25.	:U	;
: 56-23-5	Carbon Tetrachloride	1 25.	; U	ŀ
108-05-4	Vinyl Acetate	_; 50.	: U	;
1 75-27-4	Bromodichloromethane	_  25.	: U	;
1 78-87-5	1,2-Dichloropropane	_; 25.	: U	;
110061-01-5	cis-1.3-Dichloropropene	_: 25.	: U	-
1 79-01-6	Trichloroethene	_! 480.	:	;
124-48-1	Dibromochloromethane	_1 25.	: U	;
1 79-00-5	1.1,2-Trichloroethane	_1 25.	:U	:
	Benzene	_; 25.	:U	;
110061-02-6	Trans-1,3-Dichloropropene	_; 25.	۲U	;
1 75-25-2	Bromoform	1 25.	ن :	;
108-10-1	4-Methyl-2-Pentanone	_; 50.	٠. ن	;
591-78-6	2-Hexanone	_: 50.	: ប	1
127-18-4	Tetrachloroethene	_;	١U	;
1 79-34-5	1,1,2,2-Tetrachloroethane	1 25.	١U	;
108-88-3	Toluene	]: 25.	:U	;
108-90-7	Chlorobenzene	25.	; U	;
	Ethylbenzene		¦U	;
	Styrene		l U	:
1330-20-7	Xylene(total)	25.	: U	;
		- 		;

#### ANTWITTE AUDHMITO WMWELPID DHIM DWEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: V154V6FS

00041

SDG No.: 

Matrix: (Soil/water) WATER Lab Sample ID: 3588.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3027

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/22/91

Column: (pack/cap) PACk Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	: RT	EST. CONC.	Q
1				1
1 2				;;
3				!!
				<b>:</b> :
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7		<u> </u>		;
8		;		!!
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29.				

1/87 Rev.

FORM I VOA-TIC

EPA SAMPLE NU.

V197V6FS

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 0004

Matrix: (Soil/water) WATER Lab Sample ID: 3587.8

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63026

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/22/91

Column: (pack/cap) PACk Dilution Factor: 10.00

CONCENTRATION	UNITS:
---------------	--------

74-87-3Chloromethane       100. IU         74-83-9Bromomethane       100. IU         75-01-4Vinyl Chloride       1400.         75-00-3Chloroethane       100. IU         75-09-2Methylene Chloride       50. IU         67-64-1Acetone       100. IU         75-15-0Carbon Disulfide       50. IU         75-34-3	CAS NO.	COMPOUND	(ug/L or ug	/k.g) UG/L	Ω	
74-83-9Bromomethane	!			:	:	:
75-01-4	1 74-87-3	Chloromethane		100.	. –	1
75-00-3Chloroethane					١U	;
75-09-2Methylene Chloride	1 75-01-4	Vinyl Chloride		1400.	;	;
67-64-1	75-00-3	Chloroethane		100.	. —	;
75-15-0Carbon Disulfide	1 75-09-2	Methylene Chlori	de	50.	· —	;
75-15-0Carbon Disulfide	67-64-1	Acetone		100.	. –	;
75-34-31,1-Dichloroethane	1 75-15-0	Carbon Disulfide		: 50.		;
540-59-01, 2-Dichloroethene (total)	75-35-4	1.1-Dichloroethe	ne			;
67-66-3Chloroform	1 75-34-3	1,1-Dichloroetha	ne		:U	- 1
107-06-21,2-Dichloroethane	1 540-59-0	1.2-Dichloroethe	ne (total)	1700.	•	;
78-93-32-Butanone	67-66-3	Chloroform		50.	· <del>-</del>	;
71-55-61,1.1-Trichloroethane	107-06-2	1.2-Dichloroetha	ne		^	;
71-55-61,1,1-Trichloroethane	1 78-93-3	2-Butanone			•	. !
108-05-4Vinyl Acetate	71-55-6	1,1,1-Trichloroe	thane	50.	ŀU	;
75-27-4Bromodichloromethane	: 56-23-5	Carbon Tetrachlo	ride	50.	. –	;
78-87-51,2-Dichloropropane	108-05-4	Vinyl Acetate		100.	_	;
10061-01-5cis-1,3-Dichloropropene	1 75-27-4	Bromodichloromet	hane	50.		- 1
10061-01-5cis-1,3-Dichloropropene	1 78-87-5	1,2-Dichloroprop	ane:	50.		;
124-48-1Dibromochloromethane	110061-01-5	cis-1.3-Dichloro	propene :	50.	:U	+
124-48-1Dibromochloromethane	79-01-6	Trichloroethene	!	50.	; U	;
71-43-2Benzene	1 124-48-1	Dibromachloromet	hane:	50.	:U	;
10061-02-6Trans-1,3-Dichloropropene	1 79-00-5	1,1,2-Trichloroe	thane:	50.	¦U	;
10061-02-6Trans-1,3-Dichloropropene			:		١U	;
108-10-14-Methyl-2-Pentanone	10061-02-6	Trans-1.3-Dichlo	ropropene :	50.	រប	;
108-10-14-Methyl-2-Pentanone	1 75-25-2	Bromoform		50.	١U	1
591-78-62-Hexanone       100. U         127-18-4Tetrachloroethene       50. U         79-34-51,1,2,2-Tetrachloroethane       50. U         108-88-3Toluene       50. U         108-90-7Chlorobenzene       50. U         100-41-4Ethylbenzene       50. U         100-42-5Styrene       50. U	108-10-1	4-Methyl-2-Penta	none :	100.	:U	;
127-18-4Tetrachloroethene	591-78-6	2-Hexanone	!	100.	: U	1
79-34-51,1,2,2-Tetrachloroethane 50. U 108-88-3Toluene 50. U 108-90-7Chlorobenzene 50. U 100-41-4Ethylbenzene 50. U 100-42-5Styrene 50. U	127-18-4	Tetrachloroethen	•	50.	:U	;
108-88-3Toluene	79-34-5	1,1,2,2-Tetrachlo	proethane:	50.	¦ U	;
108-90-7Chlorobenzene	108-88-3	Toluene		50.	יו	;
100-41-4Ethylbenzene  50.  U     100-42-5Styrene  50.  U	108-90-7	Chlorobenzene		50.	: U	1
100-42-5Styrene  50.  U	100-41-4	Ethylbenzene_		50.	:U	;
1330-20-7Xylene(total)   50.  U	100-42-5	Styrene		50.	١U	:
	1330-20-7	Xylene(total)		50.	١U	;
		,,			-	_

# AMERITEE MUMINITO MINUFICIAL MINING OFFET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: .

SDG No.: 00048

Matrix: (SOil/water) WATER Lab Sample ID: 3587.8

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63026

.evel: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/22/91

Column: (pack/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	' ! RT	EST. CONC.	. α
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1.4		! !		<u>'</u>
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FORM I VOA-TIC

## VOLATILE ORGANICS ANALYSIS DATA SHEET

51-18

Lab Name: PACE Contract:

Matrix: (Soil/water) WATER Lab Sample ID: 3595.9

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63024

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/22/91

Column: (pack/cap) PACk Dilution Factor: 20.00

CAS NO.	COMPOUND	(nā\r (nā\r				Ω	
1				;		!	
1 74-87-3	Chloromethane			!	200.	ŀU	i
1 74-83-9	Bromomethane			!	200.	١U	ì
1 75-01-4	Vinyl Chloride			!	200.	¦ U	;
1 75-00-3	Chloroethane			!	200.	!U	i
1 75-09-2	Methylene Chlor	.rqe		!	100.	l U	;
: 67-64-1	Acetone			!	200.	ΙU	;
1 /5-15-0	Carbon Disultio	e		'	100.	!U	ì
1 75-35-4	1,1-Dichloroeth	ene		!	100.	١U	;
1 75-34-3	1,1-Dichloroeth	ane		!	100.	I U	i
1 540-59-0	1,2-Dichloroeth	ene (tot	al)		100.	U	
67-66-3	Chloroform				100.	!U	i
1 107-06-2~-	1.2-Dichloroeth	ane		;	100.	IU ·····	:
1 78-93-3	2-Butanone				इंक्ट.	HR	;
71-55-6~-	1,1,1-Trichlord	ethane _		;	100.	i U	:
: 56-23-5	Carbon Tetrachl	oride		;	100.	: U	;
108-05-4	Vinyl Acetate _			<u> </u>	200.	:U	i
75-27-4	Bromodichlorome	thane		!	100.	i U	
1 78-87-5	1,2-Dichloropro	pane		!	100.	!U	i
110061-01-5	cis-1,3-Dıchlor	opropene		!	100.	יטו	;
1 79-01-6	Trichloroethene			;	100.	U	1
	Dibromochlorome				100.	:U	•
1 79-00-5~-	1,1,2-Trichloro				100.	ΙU	i
					100.	i U	•
	Trans-1,3-Dichl				100.	ι U	1
1 75-25-2	Bromoform			;	100.	١U	;
108-10-1	4-Methyl-2-Pent	anone		!	200.	U	i
591-78-6	2-Hexanone			!	200.	lu	1
	Tetrachloroethe				3200.	1	
	1,1,2,2-Tetrach				100.	:U	;
108-88-3	Toluene			;	100.	: U	•
	Chlorobenzene _				100.	:U	1
	Ethylbenzene				100.	:U	;
100-42-5	Styrene			;	100.	:U	;
1330-20-7	Xylene(total) _			;	100.	:U	;
						. '	. :

#### ANTWLITTE REMEMBERS HIMPELOTO NULL PUITEL TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: ,

SDG No.: 00122

Matrix: (soil/water) WATER

Lab Sample ID: 3595.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3024

.evel: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/22/91

Column: (pack/cap) PACk

Dilution Factor: 20.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	: : RT	: EST. CONC.	Ω
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FORM I VOA-TIC

## VOLATILE ORGANICS ANALYSIS DATA SHEET

S1-18TB

Lab Name: PACE Contract:

Matrix: (Soil/water) WATER Lab Sample ID: 3597.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3059

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/23/91

Column: (pack/cap) PACk Dilution Factor: 1.00

CAS NO.	COMPOUND			rā\kā) ALION Ni		Ω	
74-87-3 74-83-9 75-01-4 75-09-2 75-09-2 75-15-0 75-35-4 75-34-3 107-06-2 107-06-2 108-05-4 108-87-5 124-48-1 79-01-6 124-48-1 79-00-5 108-10-1 108-10-1 108-88-3 108-88-3	ChloromethaneBromomethaneVinyl ChlorideChloroethaneChloroethaneAcetoneCarbon Disulfide1,1-Dichloroethane1,2-Dichloroethane1,2-Dichloroethane1,2-Dichloroethane1,1-Trichloroethane1,1,1-Trichloroethane2-Butanone1,1,1-Trichloroethane1,2-DichloropropeCarbon Tetrachloroethane1,2-DichloropropeTrichloroethene1,2-TrichloroetheneTrichloroetheneTrans-1,3-DichloroetheneTrans-1,3-DichloroetheneTrans-1,3-DichloroetheneTrans-1,3-DichloroetheneTrans-1,3-DichloroetheneTrans-1,3-DichloroetheneTrans-1,3-DichloroetheneTrans-1,3-DichloroetheneTrans-1,3-Dichloroethene	de de ne ne (tot ne thane ane ane oropene	al)	ug/kg)	10. 10. 10. 10. 10. 5. 10. 5. 5. 5. 5. 10. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.		
100-41-4	Chlorobenzene Ethylbenzene Styrene Xylene(total)			<del> </del>	5. 5. 5.	: ; n 7 ; n 7 ; n 7	:

#### VULATILE URBANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Contract: Lab Name: PACE

S1-18TB

00128

SDG No.:

Matrix: (Soil/water) WATER

Lab Sample ID: 3597.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3059

Level: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pach/cap) PACk

Number TICs found: 0

Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

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CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	: Ω
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FORM I VOA-TIC . 1/87 Rev.

### VOLATILE ORGANICS ANALYSIS DATA SHEET

54-1ē

tab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3602.5

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63069

Level: (low/med) LOW Date Received: 5/16/91

% Moisture: not dec.100. Date Analyzed: 5/23/91

Column: (pack/cap) PACK Dilution Factor: 10.00

	CONCENTRATI	ON UNITS:	
CAS NO. COMPOUND	(ug/L or ug	ı/k.g) UG/L	۵
		]	-;;
: 74-87-3Chloromethane		100.	: U :
1 74-83-9Bromomethane		100.	; U ;
<pre>1 75-01-4Vinyl Chloride</pre>		100.	: U :
: 75-00-3Chloroethane		100.	; U ;
: 75-09-2Methylene Chlori	de	50.	; U ;
: 67-64-1Acetone		100.	:0 :
: 75-15-0Carbon Disulfide		; 50.	: U :
: 75-35-41,1-Dichloroethe	ne_ <u></u> _	50.	: U :
: 75-34-31,1-Dichloroetha	ne	50.	: U :
: 540-59-01,2-Dichloroethe	ne (total)	50.	;U ;
67-66-3Chloroform		50.	; U ;
107-06-21,2-Dichloroetha			100 1
: 78-93-32-Butanone		। মূল.	WR:
71-55-61,1,1-Trichloroe	thane	50.	; U ;
56-23-5Carbon Tetrachlo	ride	50.	; U ;
108-05-4Vinyl Acetate		100.	:U :
75-27-4Bromodichloromet	nane	: 50.	; U ;
78-87-51,2-Dichloroprop	ane	50.	;U :
10061-01-5cis-1,3-Dichloro	oropene	1 50.	;U ;
79-01-6Trichloroethene		50.	; b
124-48-1Dibromachloromet	nane	50.	; U ;
79-00-51,1,2-Trichloroe	thane	50.	:0 :
71-43-2Benzene		; 50.	: 07 :
10061-02-6Trans-1,3~Dichlo	ropropene	50.	:U :
75-25-2Bromoform		50.	: U :
108-10-14-Methyl-2-Pentar	none	100.	; U ;
591-78-62-Hexanone			:0 :
127-18-4Tetrachloroethene		1600.	; ;
79-34-51,1,2,2-Tetrachlo		; 50.	: U :
108-88-3Toluene			: n7 :
108-90-7Chlorobenzene			:n7 :
100-41-4Ethylbenzene			: TD1
100-42-5Styrene		50.	: 101
1330-20-7Xylene(total)		50.	: (0:1)
,		!	!!

### TENTATIVELY IDENTIFIED COMPOUNDS

Contract: .

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54-16

Lab Name: PACE

SDG No.: 00133

Matrix: (soil/water) WATER

Lab Sample ID: 3602.5

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63069

\_evel: (low/med) LOW

Date Received: 5/16/91

% Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

!		 !	 !	<del></del>
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	: α :
; ====================================	=======================================	;=======	=======================================	;=====;
1				11
				::
3				
4				!!
5				!;
6;				11
1 71				!!
' 8;		!		11
9:				!!
: 10				!!
11		!		!!
12:		;		!!
. 13		;		!!
14		!		11
15:		;		1
16		;		!!
: 17. <u></u> ;		:		!!
' 18;		:		!:
19		;		!!
20		;		
21		!		
22		;		
23		!		!
24		:	;	:
25		;		;
26.		:	;	!
_/		!	;	
28		!	;	!
29.		:		!
30		!	!	
		!.		:

FORM I VOA-TIC



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/15/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

With the exception of the field blank and trip blanks, foaming occurred during sample analyses, especially in Samples \$5-13 and \$6-18.

Detection limits for aromatic compounds were estimated in UniFirst samples.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was  $5^{\circ}$ C; cooler temperature for the UniFirst samples was  $12^{\circ}$ C. Temperatures outside the  $4^{\circ}$ C  $\pm 2^{\circ}$ C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 15, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

<u>Lab ID</u>	Date of Collection
3581	05/15/91
3582	05/15/91
3583	05/15/91
3598	05/15/91
3603	05/15/91
3604	05/15/91
3606	05/15/91
	3581 3582 3583 3598 3603 3604



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

Samples from the W.R. Grace treatment plant were preserved with HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

#### A. Initial

Initial calibration criteria were met on 5/23/91.

#### B. Continuing

Continuing calibration criteria were met on 5/24/91 with the exception of the % difference for 1,1,2,2-tetrachloroethane (actual 26.83; criteria 25). Data were not affected.

#### IV. Blanks

The trip blanks, field blank, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.



#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V6FS. The percent recoveries for 1,1-dichloroethene were below QC criteria in the MS and MSD. The relative percent difference was above QC criteria for trichloroethene. No positive results for these compounds were detected, so no data were qualified.

The laboratory quantified the spiking compounds using the average relative response factor from the initial calibration rather than the response factor for the continuing calibration. The results discussed in the preceding paragraph pertain to correctly quantified values.

### VII. Field Duplicates

Samples V140V6FS and V140V6FD were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53



Compound	MDL (ug/L)
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36
DI OWOI I MOI OPENVENE	0.30

Compounds reported in Sample S5-13 were quantified using the relative response factor from the initial calibration rather than the response factor from the continuing calibration. Correct results are listed below.

Compound	Concentration	(ug/L)
1,1-Dichloroethane	2.0	
1,1,1-Trichloroethane	25	

Spiking compound concentrations were also quantified incorrectly, as discussed in Section VI.

All other results and detection limits were acceptable with regard to the supporting data.

### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

### XII. System Performance

System performance was acceptable.

#### UNIFIRST/ENSR PACE Project Number: 810516513

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0036068 05/15/91 05/16/91 S6-18 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND W ND W
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND L

MDL

Method Detection Limit Not detected at or above the MDL. ND



### XIII. Overall Assessment of Data for a Case

Compound concentrations were corrected for Sample S5-13 and the MS and MSD.

Detection limits for aromatic compounds were estimated in all UniFirst samples.

## W. R. GRACE

## PACE Project Number: 810516512

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0035819 05/15/91 05/16/91 <u>V140 V6 FS</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE	PACE Project Number:	810516	512
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0035827 05/15/91 05/16/91 <u>V140 V6 FD</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MC Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ODIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

W. R. GRACE	PACE Project Number:	810516	512
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0035835 05/15/91 05/16/91 <u>V140 V6 FB</u>
ORGANIC ANALYSIS	,		
VOLATILE ORGANICS BY 524.2 M Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	MODIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

Method Detection Limit Not detected at or above the MDL.

MDL ND

UNIFIRST/ENSR	PACE Pro	oject Num	ber: 810516513
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL	95 0035983 05/15/91 05/16/91 S1-18 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND US 22 1/9/91
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

UNIFIRST/ENSR	PACE Project Number:		nber: 810516513
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0036033 05/15/91 05/16/91 S5-13
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND 2.3 2.0 2(2) ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND 26-1 75 ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND WJ
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND WA ND W
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

ND W

ND \_

ND

ND

0.5

0.5

0.5

0.5

#### PACE Project Number: 810516513 UNIFIRST/ENSR 95 0036041 PACE Sample Number: Date Collected: 05/15/91 Date Received: 05/16/91 <u>Units</u> MDL S6-18 Parameter ORGANIC ANALYSIS VOLATILE ORGANICS BY 524.2 MODIFIED ug/L 0.5 ND Vinyl chloride ug/L 0.5 ND Chloroethane ND Methylene chloride ug/L 0.5 1,1-Dichloroethene ug/L 0.5 ND 1,1-Dichloroethane ND ug/L 0.5 trans-1,2-Dichloroethene ug/L 0.5 ND cis-1,2-Dichloroethene uq/L 0.5 ND Chloroform ug/L 0.5 ND 1,2-Dichloroethane ug/L 0.5 ND 1,1,1-Trichloroethane ug/L 0.5 ND Carbon tetrachloride ug/L 0.5 ND Bromodichloromethane ug/L 0.5 ND 1,2-Dichloropropane ug/L 0.5 ND cis-1,3-Dichloropropene ug/L 0.5 ND Trichloroethene ug/L 0.5 ND Dibromochloromethane 0.5 ND ug/L 1,1,2-Trichloroethane ND uq/L 0.5 Benzene ug/L 0.5 ND W) trans-1,3-Dichloropropene ug/L 0.5 ND 0.5 ND Bromoform ug/L ug/L ND Tetrachloroethene 0.5 1,1,2,2-Tetrachloroethane ug/L 0.5 ND

ug/L

ug/L

uq/L

ug/L

MDL Method Detection Limit
ND Not detected at or above the MDL.

Toluene

Chlorobenzene

Ethyl benzene

Xylene, total

UNIFIRST/ENSR	PACE Pro	ject Num	nber:	810516513
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	05/1 05/1	
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5	ND ND	
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND	
l,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene	ug/L ug/L ug/L	0.5 0.5 0.5	ND ND ND	

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

ug/L

ug/L

ug/L

ug/L ug/L

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ug/L

ug/L

ND

ND

ND

ND

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ND

ND W)

ND 1

لنه DN

MDL Method Detection Limit
ND Not detected at or above the MDL.

Dibromochloromethane

1,1,2-Trichloroethane

Tetrachloroethene

Chlorobenzene

Ethyl benzene

Xylene, total

trans-1,3-Dichloropropene

1,1,2,2-Tetrachloroethane

Benzene

Bromoform

Toluene



### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

AND RECOVERY WELL SAMPLING

VOLATILES ANALYSES DATA

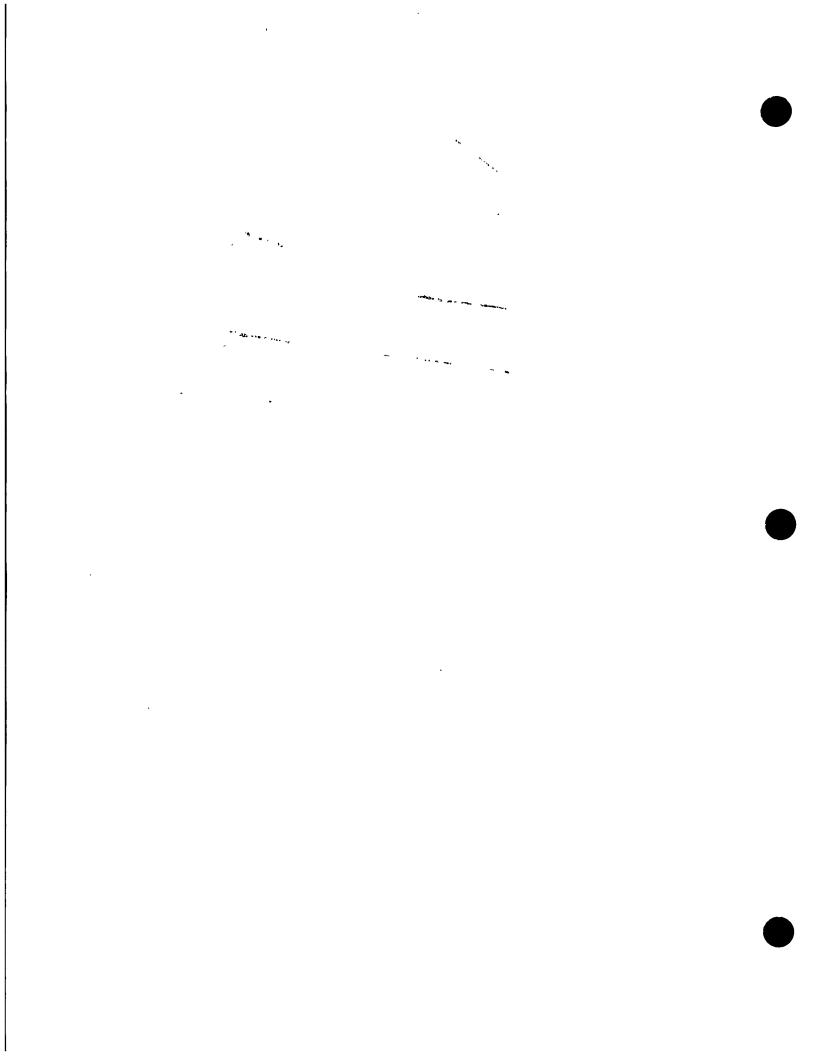
Samples Collected 5/15/91 - 5/20/91

Chemical Analyses Performed By Aquatec Inc.

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233





#### **EXECUTIVE SUMMARY**

Samples were submitted for both CLP and Method 524.2 analyses. Analytical data for both methods was submitted by the laboratory in a single data package; therefore, this validation report includes both analyses.

The analyte list for Method 524.2 analyses was reduced for the Wells G&H project. However, because of its unfamiliarity with the project, Aquatec analyzed for the full analyte list. For Method 524.2, compounds not being considered in this project were "lined out" on the Form Is submitted with this validation report.

The chain of custody form for samples collected on May 15 does not include the year (i.e., all date entries are "May 15"). This chain of custody form also has incomplete sample custody information.

Cooler temperatures were not recorded by the laboratory upon receipt of samples. Cooler temperatures outside the  $4^{\circ}\text{C}$   $\pm 2^{\circ}\text{C}$  range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.



These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Fifteen samples were collected and submitted to Aquatec Inc. on May 15 through May 20, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses pursuant to the U.S. EPA Contract Laboratory Program.

The samples included for in this Sample Delivery Group (SDG) for CLP analyses are:

Client ID	<u>Lab ID</u>	Date of Collection
15A1	134908	05/15/91
RW-1	134910	05/19/91
RW-2	134911	05/19/91
RW-3	134912	05/19/91
RW-4	134913	05/19/91
RW-5	134914	05/19/91
RW-6	134915	05/18/91
RW-7	134916	05/18/91
RW-8	134917	05/18/91
RW-9	134918	05/18/91
RW-10	134919	05/18/91
V131V11FS	134921	05/20/91
16A1	134923	05/16/91
17A1	134930	05/17/91
18A1	134937	05/18/91

Seven samples were collected and submitted to Aquatec Inc. on May 15, May 16, and May 20, 1991. The laboratory was requested to perform volatile organics (VOA) analyses pursuant to Method 524.2.

The samples included for in this SDG for Method 524.2 analyses are:

Client ID	<u>Lab ID</u>	Date of Collection
15C1	134909 134920	05/15/91 05/20/91
Trip Blank V140V11FS	134922	05/20/91
16C1 16C2	134924 134925	05/16/91 05/16/91
16C3 16D1	134926 134927	05/16/91 05/16/91
1001	131721	00/10/51



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

According to the chain of custody forms, Samples 15A1, 15C1, 16A1, 17A1, 16C1, 16C2, 16C3, and 16D1 were not preserved with HCl at the time of sample collection. Samples 15A1 and 15C1 were analyzed within the 7-day holding time for unpreserved volatile aqueous samples.

Samples 16A1, 17A1, 16C1, 16C2, 16C3, and 16D1 were analyzed outside the 7-day holding time for unpreserved samples but within the 14-day holding time for volatile aqueous samples. Detection limits for aromatic compounds were qualified as estimated in these six samples.

All other samples were preserved with HCL when collected and were analyzed within the 14-day holding time for preserved samples.

#### II. GC/MS Tuning

#### A. CLP

GC/MS tuning and mass calibrations were within criteria.

#### B. <u>Method 524.2</u>

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

#### A. Initial

CLP

Initial calibration criteria were met on 5/29/91 (Instrument OWAC) with the exception of the RRF for vinyl acetate (actual 0.046; criteria 0.1) and the %RSD for acetone (actual 35.0; criteria 30). Detection limits for vinyl acetate were rejected and positive results for acetone were qualified as estimated in Samples RW-10, V131V11FS, RW-2, and RW-2DL.

Initial calibration criteria were met on 5/31/91 (Instrument OWAD) with the exception of the %RSD for methylene chloride (actual 33.6; criteria 30) and acetone (actual 34.7; criteria 30). Positive results for these compounds were qualified as estimated in Samples RW-9, RW-8, RW-5, and RW-8RE.

Initial calibration criteria were met on 5/12/91 (Instrument OWAE) with the exception of the RRF for 2-butanone (actual 0.058;



criteria 0.1). Detection limits for 2-butanone were rejected in Samples 15A1 and 15A1DL.

Initial calibration criteria were met on 5/28/91 (Instrument OWAE) with the exception of the RRF for 2-butanone (actual 0.051; criteria 0.1) and vinyl acetate (actual 0.082). Detection limits for these two compounds were rejected in Samples 17A1, 18A1, 16A1, RW-1, RW-3, RW-4, RW-1DL, RW-4DL, RW-5, and RW-6. Detection limits for vinyl acetate were rejected and positive results for 2-butanone were qualified as estimated in Samples RW-7 and RW-7DL.

Initial calibration criteria were met on 6/1/91 (Instrument OWAE) with the exception of the RRF for 2-butanone (actual 0.052; criteria 0.1). Detection limits for 2-butanone were rejected in Samples RW-2MS and RW-2MSD.

#### Method 524.2

Initial calibration criteria were met on 5/21/91, 5/30/91, and 6/3/91 (Instrument 5100G).

#### B. Continuing

CLP

Continuing calibration criteria were met on 5/20/91 (Instrument OWAC) and 6/1/91 (Instrument OWAD).

Continuing calibration criteria were met on 5/21/91 (Instrument OWAE) with the exception of the RF for 2-butanone (actual 0.062) and vinyl acetate (actual 0.060). Data were previously qualified.

Continuing calibration criteria were met on 5/29/91 at 01:05 (Instrument OWAE) with the exception of the RF for 2-butanone (actual 0.055) and vinyl acetate (actual 0.067). Data were previously qualified.

Continuing calibration criteria were met on 5/29/91 at 13:23 (Instrument OWAE) with the exception of the RF for 2-butanone (actual 0.050) and vinyl acetate (actual 0.065). Data were previously qualified.

Continuing calibration criteria were met on 5/30/91 (Instrument OWAE) with the exception of the RF for 2-butanone (actual 0.054) and vinyl acetate (0.094) and the % difference for bromomethane (actual 28.3; criteria 25). Data for 2-butanone and vinyl acetate were previously qualified. Other data were not affected.



#### Method 524.2

Continuing calibration criteria were met on 5/22/91 and 6/3/91 (Instrument 5100G).

#### IV. Blanks

CLP

Acetone and methylene chloride were reported in Method Blanks VBLKV1, VBLKW5, and VBLKU8. Methylene chloride was reported in Method Blanks VBLKQ5, VBLKV6, and VBLKX3. Acetone and methylene chloride results were qualified as less than the reported values in the associated field samples.

### Method 524.2

Methylene chloride, trichloroethene, and toluene were reported in Method Blank VBLKR3. Acetone, methylele chloride, trichloroethene, and toluene were reported in Method Blank VBLKR9. Methylene chloride and trichloroethene were reported in Method Blank VBLKV3. Methylene chloride was reported in the trip blank. Results for the above compounds were qualified as less than the reported values in the associated field samples.

No field blanks were submitted with this SDG.

#### V. Surrogate Recovery

CLP

The recovery of toluene-d8 was above QC criteria in Sample RW-8. All positive results and detection limits were qualified as estimated in RW-8.

All other surrogate recoveries were within acceptance criteria.

#### Method 524.2

Surrogate recoveries were within acceptance criteria.



#### VI. Matrix Spike/Matrix Spike Duplicate

CLP

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample RW-2. Results were within acceptance criteria.

#### Method\_524.2

No MS or MSD were performed for Method 524.2 analyses.

#### VII. Field Duplicates

No field duplicates were submitted for analysis by either analytical method.

#### VIII. Internal Standards Performance

CLP

Internal standards areas and retention times were acceptable.

#### Method 524.2

Internal standard areas for fluorobenzene, 1,4-dichlorobenzene-d4, and chlorobenzene-d5 were low in Samples 15C1, 15C1RE, and 16C2. Positive results and detection limits were qualified as estimated in those three samples.

All other internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable for both analytical methods.

### X. Compound Quantitation and Reported Detection Limits

CLP

Vinyl chloride, 1,2-dichloroethenes, and trichloroethene were detected at concentrations beyond the calibration range of the instrument in Sample 15Al. The sample was rerun at a dilution. Reported results for these three compounds were



rejected in Sample 15A1; results reported for these compounds were acceptable without qualification in Sample 15A1DL.

Vinyl chloride and 1,2-dichloroethenes were detected at concentrations beyond the calibration range of the instrument in Samples RW-1 and RW-2. These samples were rerun at a dilution. Reported results for these two compounds were rejected in Samples RW-1 and RW-2; results reported for these compounds were acceptable without qualification in Samples RW-1DL and RW-2DL.

The compound 2-butanone was detected at a concentration beyond the calibration range of the instrument in Sample RW-7. This sample was rerun at a dilution. The reported result for 2-butanone was rejected in Sample RW-7; the result reported for Sample RW-7DL was acceptable without qualification.

All other results and detection limits were acceptable based on the supporting data.

#### Method 524.2

Results and detection limits were acceptable based on the supporting data.

#### XI. Tentatively Identified Compounds

#### CLP

Tentatively identified compounds (TICs) were reported in Samples RW-5 (RT 12.75), RW-7 (RT 8.95), RW-8RE (RT 12.75), and 17A1 (RT 8.80). The TIC reported in Sample RW-8RE was rejected because it was not duplicated in Sample RW-8.

#### Method 524.2

TICs were not provided for these analyses.

#### XII. System Performance

System performance was acceptable for both analytical methods.

#### XIII. Overall Assessment of Data for a Case

No field blanks, trip blanks, or field duplicates were submitted for CLP analyses. No field blanks or field duplicates were submitted for Method 524.2 analyses, nor were MS/MSD samples requested. Although most surrogate recoveries and internal area counts were acceptable, this data should be used with caution because of the lack of quality control samples.

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15A1		
		 *

Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134908

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134908V

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 05/21/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)UG/L	Q
		3, 3, .	-

74-87-3         Chloromethane         10 U           74-83-9         Bromomethane         10 U           75-01-4         Vinyl Chloride         480 B           75-00-3         Chloroethane         5 U           75-90-2         Methylene Chloride         5 U           67-64-1         Acetone         10 U           75-35-4         1,1-Dichloroethene         5 U           540-59-0         1,2-Dichloroethane         5 U           67-66-3         Chloroform         5 U           107-06-2         1,2-Dichloroethane         5 U           78-93-3         2-Butanone         5 U           71-55-6         1,1,1-Trichloroethane         5 U           56-23-5         Carbon Tetrachloride         5 U           108-05-4         Vinyl Acetate         10 W           75-27-4         Bromodichloromethane         5 U           75-27-4         Bromodichloromethane         5 U           79-01-6         Trichloroethene         5 U           124-48-1         Dibromochloromethane         5 U           79-02-5         1,2-Trichloroethane         5 U           106-102-6         trans-1,3-Dichloropropene         5 U           50         U		
74-83-9         Bromomethane         10 U           75-01-4         Vinyl Chloride         480 B           75-00-3         Chloroethane         4 B           75-09-2         Methylene Chloride         5 U           67-64-1         Acetone         10 U           75-15-0         Carbon Disulfide         5 U           75-35-4         1,1-Dichloroethene         5 U           540-59-0         1,2-Dichloroethane         5 U           67-66-3         Chloroform         5 U           107-06-2         1,2-Dichloroethane         5 U           78-93-3         2-Butanone         5 U           71-55-6         1,1,1-Trichloroethane         5 U           75-27-4         Bromodichloromethane         5 U           78-87-5         1,2-Dichloropropane         5 U           10061-01-5         cis-1,3-Dichloropropene         5 U           79-01-6         Trichloroethane         5 U           79-00-5         1,1,2-Trichloroethane         5 U           75-22-         Bromoform         5 U           108-10-1         4-Methyl-2-Pentanone         5 U           108-10-1         4-Methyl-2-Pentanone         10 U           109-78-6         2-Hex	74-87-3Chloromethane	10 0
75-01-4		
75-00-3		
75-09-2		
67-64-1		1
75-15-0		1
75-35-4		1
75-34-3       -1,1-Dichloroethane       5       U         540-59-0       -1,2-Dichloroethene (total)       870 R         67-66-3       -Chloroform       5       U         107-06-2       -1,2-Dichloroethane       5       U         78-93-3       -2-Butanone       10       U         71-55-6       -1,1,1-Trichloroethane       5       U         56-23-5       -Carbon Tetrachloride       5       U         108-05-4       -Vinyl Acetate       5       U         75-27-4       -Bromodichloromethane       5       U         78-87-5       -1,2-Dichloropropane       5       U         10061-01-5       -cis-1,3-Dichloropropene       5       U         79-01-6       -Trichloroethene       5       U         124-48-1       -Dibromochloromethane       5       U         79-00-5       -1,1,2-Trichloroethane       5       U         71-43-2       -Benzene       5       U         10061-02-6       -trans-1,3-Dichloropropene       5       U         75-25-2       -Bromoform       5       U         108-10-1       -4-Methyl-2-Pentanone       10       U         127-18-4       -T		
540-59-01,2-Dichloroethene       (total)       870 g f         67-66-3		
67-66-3       Chloroform       5       U         107-06-2       1,2-Dichloroethane       5       U         78-93-3       2-Butanone       10       U         71-55-6       -1,1,1-Trichloroethane       5       U         56-23-5       -Carbon Tetrachloride       5       U         108-05-4       -Vinyl Acetate       10       U         75-27-4       Bromodichloromethane       5       U         78-87-5       -1,2-Dichloropropane       5       U         10061-01-5       -cis-1,3-Dichloropropene       5       U         79-01-6       -Trichloroethane       5       U         124-48-1       -Dibromochloromethane       5       U         124-48-1       -Dibromochloromethane       5       U         79-00-5       -1,1,2-Trichloroethane       5       U         1061-02-6       -trans-1,3-Dichloropropene       5       U         75-25-2       -Bromoform       5       U         108-10-1       -4-Methyl-2-Pentanone       10       U         107-18-4		
78-93-3       -2-Butanone         71-55-6       -1,1,1-Trichloroethane       5         56-23-5       -Carbon Tetrachloride       5         108-05-4       -Vinyl Acetate       10         75-27-4       -Bromodichloromethane       5         75-27-4       -Bromodichloromethane       5         10061-01-5       -cis-1,3-Dichloropropene       5         79-01-6       -Trichloroethene       5         124-48-1       -Dibromochloromethane       5         124-48-1       -Dibromochloromethane       5         17-43-2       -Benzene       5         10061-02-6       -trans-1,3-Dichloropropene       5         75-25-2       -Bromoform       5         108-10-1       4-Methyl-2-Pentanone       10         107-18-6       2-Hexanone       10         127-18-4       -Tetrachloroethene       11         79-34-5       -1,1,2,2-Tetrachloroethane       5         108-88-3       -Toluene       4         100-41-4       -Ethylbenzene       5         100-42-5       -Styrene       5		5 U
78-93-3       -2-Butanone         71-55-6       -1,1,1-Trichloroethane       5         56-23-5       -Carbon Tetrachloride       5         108-05-4       -Vinyl Acetate       10         75-27-4       -Bromodichloromethane       5         75-27-4       -Bromodichloromethane       5         10061-01-5       -cis-1,3-Dichloropropene       5         79-01-6       -Trichloroethene       5         124-48-1       -Dibromochloromethane       5         124-48-1       -Dibromochloromethane       5         17-43-2       -Benzene       5         10061-02-6       -trans-1,3-Dichloropropene       5         75-25-2       -Bromoform       5         108-10-1       4-Methyl-2-Pentanone       10         107-18-6       2-Hexanone       10         127-18-4       -Tetrachloroethene       11         79-34-5       -1,1,2,2-Tetrachloroethane       5         108-88-3       -Toluene       4         100-41-4       -Ethylbenzene       5         100-42-5       -Styrene       5		
71-55-61,1,1-Trichloroethane       5       U         56-23-5Carbon Tetrachloride       5       U         108-05-4Vinyl Acetate       10       U         75-27-4Bromodichloromethane       5       U         78-87-51,2-Dichloropropane       5       U         10061-01-5		10 W R
108-05-4	71-55-61,1,1-Trichloroethane	ן "ט   5
75-27-4	56-23-5Carbon Tetrachloride	
78-87-51,2-Dichloropropane       5       U         10061-01-5cis-1,3-Dichloropropene       5       U         79-01-6Trichloroethene       530       E         124-48-1Dibromochloromethane       5       U         79-00-51,1,2-Trichloroethane       5       U         71-43-2	108-05-4Vinyl Acetate	10/06
10061-01-5cis-1,3-Dichloropropene       5       U         79-01-6Trichloroethene       530 B         124-48-1Dibromochloromethane       5       U         79-00-51,1,2-Trichloroethane       5       U         71-43-2Benzene       5       U         10061-02-6trans-1,3-Dichloropropene       5       U         75-25-2Bromoform       5       U         108-10-14-Methyl-2-Pentanone       10       U         591-78-62-Hexanone       10       U         127-18-4Tetrachloroethene       5       U         79-34-51,1,2,2-Tetrachloroethane       5       U         108-88-3Toluene       5       U         108-90-7Chlorobenzene       5       U         100-41-4Styrene       5       U		5 ט
79-01-6	78-87-51,2-Dichloropropane	5 U
124-48-1	10061-01-5cis-1,3-Dichloropropene	5 U _
124-48-1	79-01-6Trichloroethene	530 8 /-
71-43-2Benzene       5         10061-02-6trans-1,3-Dichloropropene       5         75-25-2Bromoform       5         108-10-14-Methyl-2-Pentanone       10         591-78-62-Hexanone       10         127-18-4Tetrachloroethene       11         79-34-51,1,2,2-Tetrachloroethane       5         108-88-3Toluene       4         108-90-7Chlorobenzene       5         100-41-4Ethylbenzene       5         100-42-5Styrene       5	124-48-1Dibromochloromethane	/ 5 U
71-43-2Benzene       5         10061-02-6trans-1,3-Dichloropropene       5         75-25-2Bromoform       5         108-10-14-Methyl-2-Pentanone       10         591-78-62-Hexanone       10         127-18-4Tetrachloroethene       11         79-34-51,1,2,2-Tetrachloroethane       5         108-88-3Toluene       4         108-90-7Chlorobenzene       5         100-41-4Ethylbenzene       5         100-42-5Styrene       5		5 U
10061-02-6trans-1,3-Dichloropropene       5         75-25-2Bromoform       5         108-10-14-Methyl-2-Pentanone       10         591-78-62-Hexanone       10         127-18-4Tetrachloroethene       11         79-34-51,1,2,2-Tetrachloroethane       5         108-88-3Toluene       4         108-90-7Chlorobenzene       5         100-41-4Ethylbenzene       5         100-42-5Styrene       5	71-43-2Benzene	5 U
108-10-14-Methyl-2-Pentanone       10 U         591-78-62-Hexanone       10 U         127-18-4Tetrachloroethene       11		5 U
591-78-62-Hexanone       10 U         127-18-4Tetrachloroethene       11         79-34-51,1,2,2-Tetrachloroethane       5 U         108-88-3Toluene       4 J         108-90-7Chlorobenzene       5 U         100-41-4Ethylbenzene       5 U         100-42-5Styrene       5 U		
127-18-4Tetrachloroethene       11         79-34-51,1,2,2-Tetrachloroethane       5         108-88-3Toluene       4         108-90-7Chlorobenzene       5         100-41-4Ethylbenzene       5         100-42-5Styrene       5	108-10-14-Methyl-2-Pentanone	
79-34-51,1,2,2-Tetrachloroethane       5 U         108-88-3Toluene       4 J         108-90-7Chlorobenzene       5 U         100-41-4Ethylbenzene       5 U         100-42-5Styrene       5 U		10 0
108-88-3Toluene       4 J         108-90-7Chlorobenzene       5 U         100-41-4Ethylbenzene       5 U         100-42-5Styrene       5 U		11
108-90-7Chlorobenzene       5 U         100-41-4Ethylbenzene       5 U         100-42-5Styrene       5 U		= , " ;
100-41-4Ethylbenzene5 U		- 1
100-42-5Styrene5 U		
1330-20-7Xylene (total)		
	1330-20-7Xylene (total)	5 U

### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

15A1
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Lab	Name: AQUATEC,	INC.	Contract:91000
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Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Lab Sample ID: 134908 Matrix: (soil/water) WATER

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134908V

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 05/21/91

Dilution Factor: 1.0 Column: (pack/cap) PACK

> CONCENTRATION UNITS: (ug/L or ug/Kg)UG/I

umber TICs found:	CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L			
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	2
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# VOLATILE ORGANICS ANALYSIS DATA SHEET

15A1DL

Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134908D1

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134908DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_ Date Analyzed: 05/21/91

Column: (pack/cap) PACK Dilution Factor: 5.882

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

CAS NO.	COMPOUND	(ug/n or ug/kg/od/n		· · · · · · · · · · · · · · · · · · ·
74-87-3	Chloromethane		59	U
74-83-9	Bromomethane			Ū
75-01-4	Vinyl Chloride			B
75-00-3	Chloroethane			Ū
	Methylene Chloride	,		BJDU
67-64-1	Acetone	·———	200	1.
75-15-0	Carbon Disulfide	<del></del> [		U
75-35-4	1,1-Dichloroethene	<del>,</del> [		Ü
75-34-3	1,1-Dichloroethane			Ū
540-59-0	1,2-Dichloroethene	(total)	660	
67-66-3	Chloroform	- (	29	
107-06-2	1,2-Dichloroethane	<del></del>	29	
78-93-3	2-Butanone			UR
71-55-6	1,1,1-Trichloroeth	ane	29	
56-23-5	Carbon Tetrachlori	de	29	
108-05-4	Vinyl Acetate			UR
75-27-4	Bromodichlorometha	ne	29	
78-87-5	1,2-Dichloropropan	e	29	
10061-01-5	cis-1,3-Dichloropr	opene	29	
79-01-6	Trichloroethene		390	
124-48-1	Dibromochlorometha	ne	29	
79-00-5	1,1,2-Trichloroeth	ane	29	
71-43-2	Benzene		29	
10061-02-6	trans-1,3-Dichloro	propene	29	
75-25-2	Bromoform		29	
	4-Methyl-2-Pentanon	<u></u>	59	
591-78-6	2-Hexanone		59	
127-18-4	Tetrachloroethene		9	
	1,1,2,2-Tetrachlor	perhane	29	i
	Toluene		29	
108-90-7	Chlorobenzene		29	
100-41-4	Ethylbenzene		29	- ,
100-42-5	Styrene		29	
1330-20-7	Xylene (total)		29	
2330 20 /				-
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### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

15A1DL		

Lab Name: AOUATEC, INC.

Contract:91000

Lab Code: AQUAI       Case No.: 26425    SAS N	No.: SDG No.: 15A1
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Matrix: (soil/water) WATER Lab Sample ID: 134908D1

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134908DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 05/21/91

Column: (pack/cap) PACK Dilution Factor: 5.882

> CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

### Number TICs found: 0 CAS NUMBER COMPOUND NAME RT EST. CONC. ======= 8.\_ 9.\_ 10.\_ 11. 12. 13. 14. 15. 16. 17.\_ 18.\_ 19.\_ 20. 21.\_ 22. 23.\_\_ 24.\_ 25. 26. 27.\_ 28. 29. 30.\_\_\_

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-1	
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Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134910

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134910DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 3.472

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

,	<del></del>	<del></del> ,
74-87-3Chloromethane	35	
74-83-9Bromomethane	35 1	
75-01-4Vinyl Chloride	2600	BR
75-00-3Chloroethane	35   1	
75-09-2Methylene Chloride		7il
67-64-1Acetone	35 1	ט ו
75-15-0Carbon Disulfide	17/1	
75-35-41.1-Dichloroethene	5   5	ע ד
75-34-31,1-Dichloroethane	17 1	1 0
540-59-01,2-Dichloroethene (total)		PR
67-66-3Chloroform	17 [	
107-06-21,2-Dichloroethane	17 1	
78-93-32-Butanone	25 1	7 R. 1
71-55-61,1,1-Trichloroethane	17 [	j '   \
56-23-5Carbon Tetrachloride	17 0	
108-05-4Vinyl Acetate	35/2	
75-27-4Bromodichloromethane	17 1	
78-87-51,2-Dichloropropane	17 0	
10061-01-5cis-1,3-Dichloropropene	17 0	
79-01-6Trichloroethene	310	<b>'</b>
124-48-1Dibromochloromethane	17 0	<del></del>
79-00-51,1,2-Trichloroethane	17 0	
71-43-2Benzene	17 0	
10061-02-6trans-1,3-Dichloropropene	17 0	
75-25-2Bromoform	17 0	
108-10-14-Methyl-2-Pentanone	35 0	
591-78-62-Hexanone	35 0	
127-18-4Tetrachloroethene	10 J	
79-34-51,1,2,2-Tetrachloroethane	17 0	
108-88-3Toluene	220	
108-90-7Chlorobenzene	17 U	
100-41-4	37	
100-41-4Ethylbenzene	17 U	
100-42-5Styrene		
1330-20-7Xylene (total)	, 36 _	

#### 1E VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-1	

Lab Name: AQUATEC, INC. Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: SDG No.: 15A1

Lab Sample ID: 134910 Matrix: (soil/water) WATER

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134910DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec. Date Analyzed: 05/29/91

Dilution Factor: 3.472 Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg)UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	_
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# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-1DL	
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Lab Name: AQUATEC, INC.

Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134910D1

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134910D2V

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 25.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L

CAS NO.	COMPOUND (ug/l of u	g/kg/0G/L	Q	
74-87-3	Chloromethane	25	0 0	1
74-83-9	Bromomethane		סט	1
75-01-4	Vinyl Chloride		0 .B	
75-00-3	Chloroethane		טוס	
75-09-2	Methylene Chloride		5 BAD U	
67-64-1	Acetone		טעס	1
75-15-0	Carbon Disulfide		טט	1
75-35-4	1,1-Dichloroethene		บี	1
75-34-3	1.1-Dichloroethane	120	וזו ר	
540-59-0	1,2-Dichloroethene (total)	3600	) B	1
67-66-3	Chloroform	120	ט ס	,
107-06-2	1,2-Dichloroethane		Ū	
		~ l	TOR	,
71-55-6	1 1 1-Trichloroethane	1 120	บี่	1
1 56-23-5	Carbon Tetrachloride	1 120	Ū	1
108-05-4	Vinyl Acetate	256	TOR	1.
75-27-4	Bromodichloromethane	120	ט '	1
78-87-5	1,2-Dichloropropanecis-1,3-Dichloropropene	120	U	1
10061-01-5	cis-1,3-Dichloropropene	120	ט	{
79-01-6	Trichloroethene	300	B	
124-48-1	Trichloroethene	120	ט	
79-00-5	1,1,2-Trichloroethane	120		\
71-43-2	Benzene	120		]
10061-02-6	trans-1,3-Dichloropropene	120	U	34
		= ■ .		ł
108-10-1	Bromoform 4-Methyl-2-Pentanone	250		
591-78-6	2-Hexanone	250		1
127-18-4	Tetrachloroethene	120		Į
79-34-5	1.1.2.2-Tetrachloroethane	120		
108-88-3	Toluene	220	B	i
108-90-7	Toluene Chlorobenzene	120		
100-41-4	·Etnylbenzene	1 120		
100-42-5	Styrene	120	ט	
1330-20-7	Styrene	120		
			<u> </u>	

### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-1DL	

Lab Name: AQUATEC, INC. Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER

Lab Sample ID: 134910D1

Sample wt/vol: 5.0 (g/mL)ML

Lab File ID: E134910D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 25.0

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		======	=======================================	====
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RW-2
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Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134911

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: C134911DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec \_\_\_\_\_ Date Analyzed: 05/30/91

Column: (pack/cap) PACK Dilution Factor: 2.273

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

	CID NO.	COLLOUID	(49/11 01 49/149/04/11		Q	
	74-87-3	Chloromethane		23	U	-
		Bromomethane		23	ַ ט	- }
	75-01-4	Vinyl Chloride			BR	
	75-00-3	Chloroethane	-	ે 23	l tt	1 、
		Methylene Chloric	ie		Bou	167
	67-64-1	Acetone			BUL	
		Carbon Disulfide			U	1 ~
		1,1-Dichloroether			Ū	I L
		1,1-Dichloroethar		11		[
		1,2-Dichloroether			BR	1.
		Chloroform		11		1
		1,2-Dichloroethar	ie	11		
	78-93-3	2-Butanone		23		~
i		1,1,1-Trichloroet	hane	11		-
	56-23-5	Carbon Tetrachlor	ide	11	U	
	108-05-4	Vinyl AcetateBromodichlorometh		23	UR	1
	75-27-4	Bromodichlorometh	ane	11	U	1
	78-87-5	1,2-Dichloropropa	ne	11	U	
1	10061-01-5	cis-1,3-Dichlorop	ropene	11	U	}
ı	79-01-6	Trichloroethene		250		
	124-48-1	Dibromochlorometh	ane	11	Ū	
ļ	79-00-5	1,1,2-Trichloroet	hane	11	U	
l	71-43-2	Benzene		11		1
l	10061-02-5	trans-1,3-Dichlor	opropene	11	U	
l	75-25-2	Bromoform		11		
l	108-10-1	4-Methyl-2-Pentan	one	23		1
I	591-78-6	2-Hexanone		23	U	
l	127-18-4	Tetrachloroethene		11	J	
١	79-34-5	1,1,2,2-Tetrachlo	roethane	11	Ŭ	
l	108-88-3			6		
		Chlorobenzene		3		
	100-41-4	Ethylbenzene		11		1
	100-42-5	Styrene			U -	
	1330-20-7	Xylene (total)		11	U	1
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#### 1E

EPA SAMPLE NO.

### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

RW-2		

Lab Name: AQUATEC, INC.

Contract:91000

Lab Code: AQUAL Case No.: 26425 SAS No.: SDG No.: 15	Lab	Code: AQUAI	Case No.: 26425	SAS No.:	SDG No.: 15A
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Matrix: (soil/water)WATER

Lab Sample ID: 134911

Sample wt/vol: 5.0 (g/mL)ML

Lab File ID: C134911DV

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_

Date Analyzed: 05/30/91

Column: (pack/cap) PACK

Number TICs found: 0

Dilution Factor: 2.273

CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	_
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RW-2DL

Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134911D1

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: C134911D2V

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec. Date Analyzed: 05/30/91

Column: (pack/cap) PACK Dilution Factor: 6.250

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

	T	Τ-	1
74-87-3Chloromethane	62	ט	
74-83-9Bromomethane	62	U	
75-01-4Vinyl Chloride	870	ł	
75-00-3Chloroethane	62	Ū	
75-09-2Methylene Chloride	31	BJiL	45
67-64-1Acetone	45	BJU	14/41
75-15-0Carbon Disulfide	31		12
75-35-41,1-Dichloroethene	31	ט	100
75-34-31,1-Dichloroethane	31	U	1
540-59-01,2-Dichloroethene (total)	960	ļ	15
67-66-3Chloroform	31	<u> </u>	12
107-06-21,2-Dichloroethane	31	บ	۲
78-93-32-Butanone	62	U	chull,
71-55-61,1,1-Trichloroethane	31	Ū	<del>                                     </del>
56-23-5Carbon Tetrachloride	31	U	
108-05-4Vinyl Acetate	62	OR	اعرا
75-27-4Bromodichloromethane	31		Ť
78-87-51,2-Dichloropropane	31	U	
10061-01-5cis-1,3-Dichloropropene	31	U	
79-01-6Trichloroethene	240		
124-48-1Dibromochloromethane	31	Ū	
79-00-51,1,2-Trichloroethane	31	U	
71-43-2Benzene	31	IJ	
10061-02-6trans-1,3-Dichloropropene	31	IJ	
75-25-2Bromoform	31	U	
108-10-14-Methyl-2-Pentanone	62	ָ ט	
591-78-62-Hexanone	62	ט	
127-18-4Tetrachloroethene	10	J	
79-34-51,1,2,2-Tetrachloroethane	31	ט	
108-88-3Toluene	31	U	
108-90-7Chlorobenzene	31	ט	
100-41-4Ethylbenzene	31	ט	
100-42-5Styrene	- 31	ן ט	
1330-20-7Xylene (total)	31	บ	

#### 1E VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

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Contract:91000

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Lab Code: AQUAI	Case No.: 26425	SAS No.: SDG No.: 15A1
Matrix: (soil/water)	WATER	Lab Sample ID: 134911D1
Sample wt/vol:	5.0 (g/mL)ML	Lab File ID: C134911D2V
Level: (low/med)	LOW	Date Received: 05/21/91
% Moisture: not dec.	***************************************	Date Analyzed: 05/30/91
Column: (pack/cap)	PACK	Dilution Factor: 6.250

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

CAS NUMBER COMPOUND NAME RT EST. CONC. Q 3.\_\_ 9.\_\_\_\_ 10.\_\_\_\_ 11.\_\_\_\_ 12.\_\_\_\_ 13.\_\_\_\_ 15.\_\_\_\_ 16.\_\_\_\_ 17.\_\_\_\_ 18.\_\_\_\_ 19.\_\_\_\_ 20.\_\_\_\_ 21.\_\_\_ 22.\_\_\_\_ 23.\_\_\_\_\_ 25.\_\_\_\_ 26.\_\_\_\_ 27.\_\_\_\_ 28.\_\_\_\_ 30.

EPA SAMPLE NO.

RW-3	
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Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134912

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134912DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 8.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

			_
74-87-3Chloromethane	80	ט	
74-83-9Bromomethane	1	Ū	
75-01-4Vinyl Chloride	710		
75-00-3Chloroethane	<b>-</b> !	J	-
75-09-2Methylene Chloride		JU	Ι.
67-64-1Acetone		Ū	
75-15-0Carbon Disulfide	40		-
75-35-41,1-Dichloroethene	- 1	Ū	1
75-34-31,1-Dichloroethane	40	1	
540-59-01,2-Dichloroethene (total)			
67-66-3Chloroform	40	Ū	1
107-06-21,2-Dichloroethane	40		
78-93-32-Butanone		UR	
71-55-61,1,1-Trichloroethane	40		1
56-23-5Carbon Tetrachloride	40		
108-05-4Vinyl Acetate		UR	١.,
75-27-4Bromodichloromethane	40		
78-87-51,2-Dichloropropane	40		1
10061-01-5cis-1,3-Dichloropropene		1	
79-01-6Trichloroethene	1300		
124-48-1Dibromochloromethane	40		1
79-00-51,1,2-Trichloroethane	40		1
71-43-2Benzene	40	U	1
10061-02-6trans-1,3-Dichloropropene	40	U	
75-25-2Bromoform	40	U	[
108-10-14-Methyl-2-Pentanone	80	บ	
591-78-62-Hexanone	80	U	
127-18-4Tetrachloroethene	29	J	1
79-34-51,1,2,2-Tetrachloroethane	40	U	1
108-88-3Toluene	40	U	
108-90-7Chlorobenzene	40	U	
100-41-4Ethylbenzene	40	ט	
100-42-5Styrene	40	บ	
1330-20-7Xylene (total)	40	U	
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# 1E VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-3		

Lab	Name: AQUATEC,	INC.	Contract:91000
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Number TICs found: 0

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134912

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134912DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 8.0

CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

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CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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EPA SAMPLE NO.

RW-4	

Lab Name: AQUATEC, INC. Contract: 91000

Matrix: (soil/water) WATER Lab Sample ID: 134913

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134913DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 4.292

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)UG/L	Q

EPA SAMPLE NO.

#### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

RW-4
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Lab Name: AQUATEC, INC. Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134913

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134913DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 4.292

# CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg)UG/L

		1	Γ	<u> </u>
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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RW-4DL
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Lab Name: AQUATEC, INC.

Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER

Lab Sample ID: 134913D1

Sample wt/vol: 5.0 (g/mL)ML

Lab File ID: E134913D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_

Date Analyzed: 05/29/91

Column: (pack/cap) PACK

Dilution Factor: 8.065

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L

	(43, 2 02 43	,,,, 00, 2	×	
74-87-3	Chloromethane	81	บ	
74-83-9	Bromomethane	- 1	U	
75-01-4	Vinyl Chloride	670		
75-00-3	Chloroethane	- I	U	
	Methylene Chloride	- I	BJOU	
67-64-1	Acetone	>	U	_
75-15-0	Carbon Disulfide		U	7
75-35-4	1.1-Dichloroethene	- 1	U	7
75-34-3	1,1-Dichloroethane	• 1	U	1.7
540-59-0	1,2-Dichloroethene (total)	1200		1
67-66-3	Chloroform	40		×
107-06-2	1,2-Dichloroethane	40	ו ט	
78-93-3	2-Butanone	1 82	OR-	4
71-55-6	1,1,1-Trichloroethane	40	ן ט	-
56-23-5	Carbon Tetrachloride	40	U	. :
108-05-4	Vinyl Acetate	83.	UR	Lo hair
75-27-4	Bromodichloromethane	40	ָּן ט	
78-87-5	1,2-Dichloropropane	40	บ	
10061-01-5	cis-1.3-Dichloropropene	40	U	~
79-01-6	Trichloroethene	340	<b>む</b>	
124-48-1	Dibromochloromethane	40		
79-00-5	1,1,2-Trichloroethane	40	U	
71-43-2	Benzene	40	Ū	
10061-02-6	trans-1,3-Dichloropropene	4.Û	υ	
75-25-2	Bromoform	40	[ ט	
108-10-1	4-Methyl-2-Pentanone	81	ט	
591-78-6	2-Hexanone	81	<b>ט</b>	
127-18-4	Tetrachloroethene	40	ט	
79-34-5	1,1,2,2-Tetrachloroethane	40	ט	
108-88-3		40	U	
108-90-7	Chlorobenzene	40	ט	
100-41-4	Ethylbenzene	40	ט	
100-42-5	Styrene	40	ט	
1330-20-7	Xylene (total)	40	ט	

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-4DL	

ab 1	Name: AQUATEC,	INC.	Contract:91000
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ab Code: AQUAI	Case No.: 26425	SAS No.: SDG No.: 15A1
datrix: (soil/water	) WATER	Lab Sample ID: 134913D1
ample wt/vol:	5.0 (g/mL)ML	Lab File ID: E134913D2V
revel: (low/med)	LOW	Date Received: 05/21/91
Moisture: not dec	· <u> </u>	Date Analyzed: 05/29/91
'olumn: (pack/cap)	PACK	Dilution Factor: 8.065

CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
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7. 8. 9.				
10. 11. 12.				
14				
16. 17. 18.				
23.				
24. 25. 26.				
27. 28. 				
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RW-5
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Lab Name: AQUATEC, INC. Contract: 91000

ab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134914

iample wt/vol: 5.0 (g/mL)ML Lab File ID: D134914D2V

Level: (low/med) LOW Date Received: 05/21/91

Moisture: not dec. \_\_\_\_ Date Analyzed: 06/01/91

Tolumn: (pack/cap) PACK Dilution Factor: 4.348

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

		<del></del>
74-87-3Chloromethane	43	U
74-83-9Bromomethane	The state of the s	Ü
75-01-4Vinyl Chloride	46	-
75-00-3Chloroethane	= =	Ū
75-09-2Methylene Chloride		Bou
67-64-1Acetone	43	1
75-15-0Carbon Disulfide	22	
75-35-41,1-Dichloroethene	22	
75-34-31,1-Dichloroethane	22	
540-59-01,2-Dichloroethene (total)	360	1
67-66-3Chloroform	22	
107-06-21,2-Dichloroethane	22	-
78-93-32-Butanone		OR
71-55-61,1,1-Trichloroethane	22	
56-23-5Carbon Tetrachloride	22	
108-05-4Vinyl Acetate		OR
75-27-4Bromodichloromethane	22	
78-87-51,2-Dichloropropane	22	
10061-01-5cis-1,3-Dichloropropene	22	
79-01-6Trichloroethene	510	l l
124-48-1Dibromochloromethane	221	
79-00-51,1,2-Trichloroethane	22	
71-43-2Benzene	22	1
L0061-02-6trans-1,3-Dichloropropene	22	
75-25-2Bromoform	22	
.08-10-14-Methyl-2-Pentanone	43	-
91-78-62-Hexanone	43	
27-18-4Tetrachloroethene	13	
79-34-51,1,2,2-Tetrachloroethane	22	-
108-88-3Toluene	22	
.08-90-7Chlorobenzene	22	
.00-41-4Ethylbenzene	22	
100-42-5Styrene	22	1

#### 1E VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-5	

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Name: AQUATEC,	INC.	Contract:91000	- KW-5

ab Code: AQUAI Case No.: 26425 SAS No.: SDG No.: 15A1

matrix: (soil/water)WATER Lab Sample ID: 134914

imple wt/vol: 5.0 (g/mL)ML Lab File ID: D134914D2V

evel: (low/med) LOW Date Received: 05/21/91

Moisture: not dec.\_\_\_\_ Date Analyzed: 06/01/91

olumn: (pack/cap) PACK Dilution Factor: 4.348

CONCENTRATION UNITS:

'umber TICs found: 1 (ug/L or ug/Kg)UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	_
1.1066-40-6	TRIMETHYLSILANOL	12.75	24	J
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VOLATILE	ORGANICS	ANALYSIS	DATA	SHEET

RW-6

Lab Name: AQUATEC, INC.

Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: SDG No.: 15A1

Matrix: (soil/water)WATER

Lab Sample ID: 134915

Sample wt/vol: 5.0 (g/mL)ML

Lab File ID: E134915D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_

Date Analyzed: 05/29/91

Dilution Factor: 11.628

Column: (pack/cap) PACK

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

Q

74-87-3Chloromethane	120 U	
74-83-9Bromomethane	120 0	
75-01-4Vinyl Chloride	720	
75-00-3Chloroethane	34 J	
75-09-2Methylene Chloride	24 Bou	12
67-64-1Acetone	120 U	Shalty 8/19/9,
75-15-0Carbon Disulfide	58 U	0
75-35-41,1-Dichloroethene	58 U	
75-34-31,1-Dichloroethane	58 U	$\infty'$
540-59-01,2-Dichloroethene (total)		
67-66-3Chloroform	1800 U	Ť,
107-06-21,2-Dichloroethane		3
10/-06-21,2-Dichioroethane	58 U	$\downarrow$
78-93-32-Butanone	120 02	نع
71-55-61,1,1-Trichloroethane	58 U	7
56-23-5Carbon Tetrachloride	58 U	~
108-05-4Vinyl Acetate	120 8 2	1
75-27-4Bromodichloromethane	58 บ	
78-87-51,2-Dichloropropane	58 U	
10061-01-5cis-1,3-Dichloropropene	58 U	
79-01-6Trichloroethene	660	
124-48-1Dibromochloromethane	58 U	
79-00-51,1,2-Trichloroethane	58 U	
71-43-2Benzene	58 J U j	
10061-02-6trans-1,3-Dichloropropene	58   U	
75-25-2Bromoform	58 U	
108-10-14-Methyl-2-Pentanone	120 U	
591-78-62-Hexanone	120 U	
127-18-4Tetrachloroethene	19 J	
79-34-51,1,2,2-Tetrachloroethane	58 U	
108-88-3Toluene	58 U	
108-90-7Chlorobenzene	58 U	
100-41-4Ethylbenzene	58 U	
100-42-5Styrene	58 U	
1330-20-7Xylene (total)	58 U	
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		= -

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: AQUATEC, INC. Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134915

Lab File ID: E134915D2V Sample wt/vol: 5.0 (g/mL)ML

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 05/29/01

Column: (pack/cap) PACK Dilution Factor: 11.628

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg)UG/L

1	T	1	<del>                                     </del>	
CAS NUMBER	COMPOUND NAME	RT	BST. CONC.	0
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RW-7	
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Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134916

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134916DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 6.098

CONCENTRATION UNITS:

***************************************	
CAS NO. COMPOUND (ug/L or ug/Kg)UG/I	Q

74-87-3Chloromethane	61	U
74-83-9Bromomethane	61	ט
75-01-4Vinyl Chloride	61	ן ט
75-00-3Chloroethane	61	ט
75-09-2Methylene Chloride	17	Bo U
67-64-1Acetone		Bu
75-15-0Carbon Disulfide	30	
75-35-41,1-Dichloroethene	30	
75-34-31,1-Dichloroethane	30	
540-59-01,2-Dichloroethene (total)	320	
67-66-3Chloroform	30	U
107-06-21,2-Dichloroethane	30	1
78-93-32-Butanone	1500	
71-55-61,1,1-Trichloroethane	30	
56-23-5Carbon Tetrachloride	30	i
108-05-4Vinyl Acetate		25-2
75-27-4Bromodichloromethane	30	
78-87-51,2-Dichloropropane	30	
10061-01-5cis-1,3-Dichloropropene	30	
79-01-6Trichloroethene	540	
124-48-1Dibromochloromethane	30	TT
79-00-51,1,2-Trichloroethane	30	
71-43-2Benzene	30	
10061-02-6trans-1,3-Dichloropropene	30	
75-25-2Bromoform	30	
108-10-14-Methyl-2-Pentanone		<u>.</u>
591-78-62-Hexanone	61	-
127-18-4Tetrachloroethene	13	
79-34-51,1,2,2-Tetrachloroethane	30	
108-88-3Toluene	30	
108-90-7Chlorobenzene	30	
100-41-4Ethylbenzene	30	
100-41-4Styrene	30	
1330-20-7Xylene (total)	30	II.
1330-20-7Ayrene (cocar)	30	

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-7	
RW-7	

Lab Name: AQUATEC, INC. Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134916

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134916DV

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/29/91 ₹ Moisture: not dec.\_\_\_

Column: (pack/cap) PACK Dilution Factor: 6.098

CONCENTRATION UNITS:

Number TICs found: 1 (ug/L or ug/Kg)UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
1.109-99-9	TETRAHYDROFURAN	8.95	71	• 1
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25. 26.				
28.				
29. 30.				

RW-7DL
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Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134916D1

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134916D2V

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_ Datc Analyzed: 05/31/91

Column: (pack/cap) PACK Dilution Factor: 9.766

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

			_
74-87-3Chloromethane	98	u	
74-83-9Bromomethane	98	_	
75-01-4Vinyl Chloride	98	_	
75-00-3Chloroethane	98		
75-09-2Methylene Chloride	49	ľ	1
67-64-1Acetone	98	1	Ì
75-15-0Carbon Disulfide		U	1
75-35-41.1-Dichloroethene	49		1 >
75-34-31,1-Dichloroethane	49		100
540-59-01,2-Dichloroethene (total)	260		2
67-66-3Chloroform	49		8/19/9
107-06-21,2-Dichloroethane	49		1
78-93-32-Butanone	1300	B/J	15
71-55-61,1,1-Trichloroethane	49		77
56-23-5Carbon Tetrachloride	49	U	211
108-05-4Vinyl Acetate	اهو_	UR.	~
75-27-4Bromodichloromethane	49		کر کے
78-87-51,2-Dichloropropane	49	U	^
10061-01-5cis-1,3-Dichloropropene	49	ָ ט	~
79-01-6Trichloroethene	450	ð i	
124-48-1Dibromochloromethane	49	ט	
79-00-51,1,2-Trichloroethane	49	ט	l
71-43-2Benzene	49	U	i
10061-02-6trans-1,3-Dichloropropene	49	ט	
75-25-2Bromoform	49	U	!
108-10-14-Methyl-2-Pentanone	98	ט	
591-78-62-Hexanone	98	U	
127-18-4Tetrachloroethene	49	ט	
79-34-51,1,2,2-Tetrachloroethane	49	U	
108-88-3Toluene	49	ט	
108-90-7Chlorobenzene	49	ַ ט	
100-41-4Ethylbenzene	(	ן ט	
100-42-5Styrene		U	
1330-20-7Xylene (total)	49	ט	

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### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

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	RW-7DL	

EPA SAMPLE NO.

Tab Hame. Accorded, 1110	Name:AQUATEC, IN	IC.
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Contract:91000

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- 1			

Lab Code	e: AQUAI	Case No.:	26425	SAS 1	No.:	<del></del>	SDG	No.:	15 <b>A</b> 1
Matrix:	(soil/water	) WATER			Lab	Sample	ID:	1349	16D1

(2022) (3022)

Sample wt/vol: 5.0 (g/mL)ML

Lab File ID: E134916D2V

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_

Date Analyzed: 05/31/91

Column: (pack/cap) PACK

Number TICs found: 0

Dilution Factor: 9.766

# CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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RW-8
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Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134917

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: D134917D2V

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 06/01/91

Column: (pack/cap) PACK Dilution Factor: 2.174

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

74-87-3	2 22 3 4 11 11 250 11 11 13 11 11 22 11 11 11 310	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Lix, 2/17 71
67-66-3Chloroform  107-06-21,2-Dichloroethane  78-93-32-Butanone  71-55-61,1,1-Trichloroethane  56-23-5Carbon Tetrachloride  108-05-4Vinyl Acetate  75-27-4Bromodichloromethane  78-87-51,2-Dichloropropane  10061-01-5cis-1,3-Dichloropropene	11 13 11 11 22 11 11 310 11 11 11 11 22 22	ממממממממממממממממממממממממממממממממממממממ	1 teheding 2/17 71

#### 1E VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

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RW-8	

EPA SAMPLE NO.

Lab	Name: AQUATEC,	INC.	Contract:91000
nau	Haute . ACOATEC!	<b></b> .	Contract. 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134917

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: D134917D2V

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 06/01/91

Column: (pack/cap) PACK Dilution Factor: 2.174

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg)UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	1 ~
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EPA SAMPLE NO.

RW-8RE		
	1	

Lab Name: AQUATEC, INC.

Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134917R1

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: D134917D3V

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 06/01/91

Column: (pack/cap) PACK Dilution Factor: 2.174

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

	<del></del>	<del></del> ,
74-87-3Chloromethane	22	T I
74-83-9Bromomethane	22	
75-01-4Vinyl Chloride		J
75-00-3Chloroethane	22	
75-09-2Methylene Chloride	11	
67-64-1Acetone		BOU
75-15-0Carbon Disulfide	11	
75-35-41,1-Dichloroethene	11	
75-34-31,1-Dichloroethane	11	
540-59-01,2-Dichloroethene (total)	230	
67-66-3Chloroform	11	
107-06-21,2-Dichloroethane	11	
78-93-32-Butanone	12	
71-55-61,1,1-Trichloroethane	11	
56-23-5Carbon Tetrachloride	11	
100.05.4	7.7	
108-05-4Vinyl Acetate	22	
79 97 5 1 2 Dishlaranana	11	
78-87-51,2-Dichloropropane	11	
10061-01-5cis-1,3-Dichloropropene	11	
79-01-6Trichloroethene	290	
124-48-1Dibromochloromethane	11	
79-00-51,1,2-Trichloroethane	11	
71-43-2Benzene	11	
10061-02-6trans-1,3-Dichloropropene		
75-25-2Bromoform	11	
108-10-14-Methyl-2-Pentanone	22	
591-78-62-Hexanone 127-18-4Tetrachloroethene	22	
127-18-4Tetrachloroethene	8	
79-34-51,1,2,2-Tetrachloroethane	11	ָ ט
108-88-3Toluene	11	U
108-90-7Chlorobenzene	11	ט
100-41-4Ethylbenzene	11	ן ט
	11	ט
100-42-5Styrene 1330-20-7Xylene (total)	11	ט

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VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: AQUATEC, INC.

Number TICs found: 1

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Contract:91000

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i	

Lab Code: AQUAI Case No.: 26425 SAS No.: SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134917R1

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: D134917D3V

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 06/01/91

Dilution Factor: 2.174 Column: (pack/cap) PACK

> CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

# EST. CONC. RT CAS NUMBER COMPOUND NAME \_\_\_\_\_ 220 R 1.1066-40-6 TRIMETHYLSILANOL 12.75 8. 9.\_\_ 10. 11. 12. 14. 15. 16.

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RW-9
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Lab Name: AQUATEC, INC.

Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER

Lab Sample ID: 134918

3ample wt/vol: 5.0 (g/mL)ML

Lab File ID: D134918D2V

Level: (low/med) LOW

Date Received: 05/21/91

: Moisture: not dec.\_\_\_\_

Date Analyzed: 06/01/91

Column: (pack/cap) PACK

Dilution Factor: 1.429

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

74-87-3Chloromethane	14	ט
74-83-9Bromomethane	14	
75-01-4Vinyl Chloride	14	
75-00-3Chloroethane	14	•
75-09-2Methylene Chloride		BJU
67-64-1Acetone	14	-
75-15-0Carbon Disulfide		ט
75-35-41,1-Dichloroethene		Ū
75-34-31,1-Dichloroethane		U
540-59-01,2-Dichloroethene (total)	230	] -
67-66-3Chloroform		<u> </u>
107-06-21,2-Dichloroethane		ט
78-93-32-Butanone	14	<b>ט</b>
71-55-61,1,1-Trichloroethane		ן די
56-23-5Carbon Tetrachloride		Ū
108-05-4Vinyl Acetate	14	
75-27-4Bromodichloromethane	7	
78-87-51,2-Dichloropropane	7	
10061-01-5cis-1,3-Dichloropropene	7	ט
79-01-6Trichloroethene	160	1
124-48-1Dibromochloromethane		Ū
79-00-51,1,2-Trichloroethane	4	υ
71-43-2Benzene		Ū
10061-02-6trans-1,3-Dichloropropene	7	ט
75-25-2Bromoform	7	
108-10-14-Methyl-2-Pentanone	14	
591-78-62-Hexanone	14	
127-18-4Tetrachloroethene	4	
79-34-51,1,2,2-Tetrachloroethane		<u></u> ט
108-88-3Toluene		บั
108-90-7Chlorobenzene	1	ט
LOO-41-4Ethylbenzene		<u>"</u>
100-42-5Styrene		Ū l
1330-20-7Xylene (total)	- 1	υ l

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

True o

ab	Name: AQUATEC,	INC.	Contract:91000

RW-9	

EPA SAMPLE NO.

ab Code: AQUA	Case No.: 26425	SAS No.: SDG No.: 15A1
Matrix: (soil/v	water)WATER	Lab Sample ID: 134918
<pre>sample wt/vol:</pre>	5.0 (g/mL)ML	Lab File ID: D134918D2V
Tevel: (low/m	ned) LOW	Date Received: 05/21/91
Moisture: not	dec	Date Analyzed: 06/01/91
'olumn: (pack/	cap) PACK	Dilution Factor: 1.429

CONCENTRATION UNITS: (uq/L or ug/Kg)UG/L

fumber TICs found:		or ug/Kg)		
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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EPA SAMPLE NO.

ab Name: AQUATEC,	INC.	Contract:91000	RW-10
ab Name: AQUATEC,	INC.	Contract:91000	RW-10

ab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134919

ample wt/vol: 5.0 (g/mL)ML Lab File ID: C134919DV

evel: (low/med) LOW Date Received: 05/21/91

Moisture: not dec. \_\_\_\_ Date Analyzed: 05/30/91

olumn: (pack/cap) PACK Dilution Factor: 2.5

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

75-34-31,1-Dichloroethene 12 U	
74-83-9Bromomethane 25 U 75-01-4Vinyl Chloride 25 U 75-00-3Chloroethane 25 U 75-09-2Methylene Chloride 8 DO U 67-64-1	25 U
75-01-4	
75-00-3	
75-09-2	26/17
75-35-41,1-Dichloroethene 12 U	8 8014
75-35-41,1-Dichloroethene 12 U	14 BO IL 1
75-35-41,1-Dichloroethene 12 U	
75-34-31.1-Dichloroethane 12 U	12 0
540-59-01,2-Dichloroethene (total) 280 12 U 107-06-21,2-Dichloroethane 12 U 12 U 13 U 14 U 15 U 15 U 15 U 15 U 15 U 15 U 15	12 [1
67-66-3Chloroform 12 U 107-06-21,2-Dichloroethane 12 U	(total) 280
107-06-21,2-Dichloroethane 12 U	12 0
2002	12 0
	25 U
71-55-61,1,1-Trichloroethane 12 U	ne 12 U
56-23-5Carbon Tetrachloride 12 U	e 12 U
108-05-4Vinyl Acetate	25 BR 14
75-27-4Bromodichloromethane 12 U	e 12 U
78-87-51,2-Dichloropropane12 U	12 U
10061-01-5cis-1.3-Dichloropropene 12 U	pene 12 U
79-01-6Trichloroethene 180	180
124-48-1Dibromochloromethane 12 U	e 12 Ü
79-00-51,1,2-Trichloroethane 12 U	ne 12 U
71-43-2Benzene 12 U	12 U
10061-02-6trans-1,3-Dichloropropene 12 U	ropene 12 U
75-25-2Bromoform 12 U	
108-10-14-Methyl-2-Pentanone 25 U	e 25 U
591-78-62-Hexanone 25 U	25 U
127-18-4Tetrachloroethene 6 J	
79-34-51,1,2,2-Tetrachloroethane 12 U	
108-88-3Toluene12 U	12 U
108-90-7Chlorobenzene 12 U	12 U
100-41-4Ethylbenzene 12 U	12 U
100-42-5Styrene   12 U	12 U
1330-20-7Xylene (total) 12 U	12 U

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RW-10
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ab Name:AQUATEC, INC. Contract:91000

Number TICs found: 0

ab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134919

ample wt/vol: 5.0 (g/mL)ML Lab File ID: C134919DV

evel: (low/med) LOW Date Received: 05/21/91

Moisture: not dec. \_\_\_\_ Date Analyzed: 05/30/91

olumn: (pack/cap) PACK Dilution Factor: 2.5

CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
1			4========	
2				
<sup>3</sup> ·		_		
5				<del></del>
6				
/·				
8		—		
9	· · · · · · · · · · · · · · · · · · ·	—  <del></del> -		
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3	<del></del>			
1.		<del>-  </del>		
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EPA SAMPLE NO.

V131 V11 FS

Lab Name: AQUATEC, INC.

Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134921

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: C134921DV

Level: (low/med) LOW Date Received: 05/21/91

Moisture: not dec. Date Analyzed: 05/30/91

Column: (pack/cap) PACK Dilution Factor: 5.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

74-87-3	Chloromethane	5	ס ט
74-83-9	Bromomethane		olu
75-01-4	Vinyl Chloride	34	
75-00-3	Chloroethane		0 0
75-09-2	Methylene Chloride		BOLL
67-64-1	Acetone		BJU
75-15-0	Carbon Disulfide		5 U
75-35-4	1,1-Dichloroethene		5 0
75-34-3	1,1-Dichloroethane		5 U
540-59-0	1,2-Dichloroethene (total)	660	
67-66-3	Chloroform		<u></u>
107-06-2	1,2-Dichloroethane		Ū
78-93-3	2-Butanone	_  50	טוס
71-55-6	1,1,1-Trichloroethane	25	טו
56-23-5	Carbon Tetrachloride	25	U
108-05-4	Vinyl Acetate	<del>-</del>   -	TO R
75-27-4	Bromodichloromethane		ט ו
78-87-5	1,2-Dichloropropane	25	ן ט
10061-01-5	cis-1.3-Dichloropropene	25	ט ו
79-01-6 <i>-</i>	Trichloroethene	460	)
124-48-1	Dibromochloromethane	25	ਹ
79-00-5	1,1,2-Trichloroethane	25	ן טוּ
71-43-2	Benzene	25	ן טוי
10061-02-6	trans-1,3-Dichloropropene	25	ן טן:
75-25-2	Bromoform	_   25	ן ט
108-10-1	4-Methyl-2-Pentanone	50	ן ט[י
591-78-6	2-Hexanone	50	ן ט
127-18-4	Tetrachloroethene_	12	J
79-34-5	1,1,2,2-Tetrachloroethane		ט
108-88-3	Toluene		J
108-90-7	Chlorobenzene	_ 1	U
100-41-4	Ethylbenzene		ט
100-42-5	Styrene	- I	ט
1330-20-7	Xylene (total)	25	U

### 1E

### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

V131 V11 FS

ab Name: AQUATEC, INC.

Contract:91000

	 _	-	-	•	_	
1						

ab Code: AQUAI	Case No.: 26425	SAS No.: SDG No.: 15A1
Matrix: (soil/water	) WATER	Lab Sample ID: 134921
ample wt/vol:	5.0 (g/mL)ML	Lab File ID: C134921DV
Level: (low/med)	LOW	Date Received: 05/21/91
Moisture: not dec		Date Analyzed: 05/30/91
Tolumn: (pack/cap)	PACK	Dilution Factor: 5.0

CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
1				
4				
5. 6. 7.				
9				
11.				
12.				
16				
17. 18. 19.				
21.				
22. 23. 24.				
25. 26.				
28.				
29. 30.				

16A1	
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Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134923

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134923DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 4.292

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

		<del>,</del>	-,
74-87-3Chloromethane	43	U	1
74-83-9Bromomethane	43	1	1
75-01-4Vinyl Chloride	280	_	į
75-00-3Chloroethane	43		-
75-09-2Methylene Chloride		Ju	1
67-64-1Acetone	43		1
75-15-0Carbon Disulfide	21		
75-35-41,1-Dichloroethene	21		1
75-34-31,1-Dichloroethane	21		1
540-59-01,2-Dichloroethene (total)	630		1
67-66-3Chloroform	21	Ū	1
107-06-21,2-Dichloroethane	21		
78-93-32-Butanone		U-P	1
71-55-61,1,1-Trichloroethane	21	•	
56-23-5Carbon Tetrachloride	21		1
108-05-4Vinyl Acetate		UR	1 1
75-27-4Bromodichloromethane	21		8/19/91
78-87-51,2-Dichloropropane	21		19
10061-01-5cis-1,3-Dichloropropene	21		``
79-01-6Trichloroethene	330		0
124-48-1Dibromochloromethane	21		
79-00-51,1,2-Trichloroethane	21		ي.
71-43-2Benzene	21		1 2
10061-02-6trans-1,3-Dichloropropene	21		1 3
75-25-2Bromoform	21	บ	1 7
108-10-14-Methyl-2-Pentanone	43	U	12
591-78-62-Hexanone	43	U	1
127-18-4Tetrachloroethene	10	J	
79-34-51,1,2,2-Tetrachloroethane	21		1 2
108-88-3Toluene	21		
108-90-7Chlorobenzene	21	~	
100-41-4Ethylbenzene	21		
100-42-5Styrene	21		
1330-20-7Xylene (total)	•	บว์	
•			

# 1E

VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

			_
16 <b>A1</b>			i

EPA SAMPLE NO.

Lab	Name: AQUATEC,	INC.	Contract:91000
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Number TICs found: 0

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134923

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: B134923DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_ Date Analyzed: 05/29/91

Dilution Factor: 4.292 . Column: (pack/cap) PACK

> CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

RT CAS NUMBER COMPOUND NAME EST. CONC. 0 \_\_\_\_\_\_\_ 3.\_ 9.\_ 10.\_ 11.\_\_\_ 12.\_ 13.\_ 14.\_\_ 15.\_\_\_ 16.\_\_\_\_ 17.\_ 18.\_ 19.\_ 20. 22. 23.\_ 24.\_\_\_ 25.\_ 26.\_\_\_\_ 27.\_ 28. 29.\_ 30.\_

EPA SAMPLE NO.

17A1		

Lab Name: AQUATEC, INC. Contract: 91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134930

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134930DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 3.333

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)UG/L Q

74-87-3	, <u></u>	<del>,</del>	<del></del>	-,
74-83-9	74-87-3Chloromethane	33	II	
75-01-4		1		1
75-00-3		i e	1	Į.
75-09-2				-
67-64-1				-
75-15-0				1
75-35-4				
17 U   540-59-0				1
S40-59-0	75-34-31 1-Dichloroethane	1	} -	
67-66-3	540-59-01 2-Dichloroethene (total)			1
107-06-21,2-Dichloroethane       17 U         78-93-32-Butanone       17 U         71-55-61,1,1-Trichloroethane       17 U         56-23-5Carbon Tetrachloride       17 U         108-05-4Vinyl Acetate       23 U         75-27-4Bromodichloromethane       17 U         78-87-51,2-Dichloropropane       17 U         10061-01-5			1	•
78-93-3			_	1
71-55-61,1,1-Trichloroethane 56-23-5Carbon Tetrachloride 17 U 108-05-4Vinyl Acetate 75-27-4Bromodichloromethane 75-27-4Bromodichloropropane 17 U 10061-01-5cis-1,3-Dichloropropene 17 U 79-01-6				ł
56-23-5				1
78-87-51,2-Dichloropropane       17 U         10061-01-5cis-1,3-Dichloropropene       17 U         79-01-6Trichloroethene       320         124-48-1Dibromochloromethane       17 U         79-00-51,1,2-Trichloroethane       17 U         71-43-2				1
78-87-51,2-Dichloropropane       17 U         10061-01-5cis-1,3-Dichloropropene       17 U         79-01-6Trichloroethene       320         124-48-1Dibromochloromethane       17 U         79-00-51,1,2-Trichloroethane       17 U         71-43-2				1,00
78-87-51,2-Dichloropropane       17 U         10061-01-5cis-1,3-Dichloropropene       17 U         79-01-6Trichloroethene       320         124-48-1Dibromochloromethane       17 U         79-00-51,1,2-Trichloroethane       17 U         71-43-2				3
10061-01-5cis-1,3-Dichloropropene			4	
79-01-6Trichloroethene       320         124-48-1Dibromochloromethane       17         79-00-51,1,2-Trichloroethane       17         71-43-2Benzene       17         10061-02-6trans-1,3-Dichloropropene       17         75-25-2Bromoform       17         108-10-14-Methyl-2-Pentanone       33         591-78-62-Hexanone       33         127-18-4Tetrachloroethene       9         79-34-51,1,2,2-Tetrachloroethane       17         108-88-3Toluene       4         108-90-7Chlorobenzene       17         100-41-4Ethylbenzene       17         100-42-5Styrene       17	10061-01-5cis-1.3-Dichloropropene			Dr.
124-48-1	79-01-6Trichloroethene		ł	
79-00-51,1,2-Trichloroethane       17 U         71-43-2Benzene       17 U         10061-02-6trans-1,3-Dichloropropene       17 U         75-25-2Bromoform       17 U         108-10-14-Methyl-2-Pentanone       33 U         591-78-62-Hexanone       33 U         127-18-4Tetrachloroethene       9 J         79-34-51,1,2,2-Tetrachloroethane       17 U         108-88-3Toluene       4 J         100-41-4Ethylbenzene       17 UJ         100-42-5				1.0
108-10-14-Methyl-2-Pentanone       33 U         591-78-62-Hexanone       33 U         127-18-4Tetrachloroethene       9 J         79-34-51,1,2,2-Tetrachloroethane       17 U         108-88-3Toluene       4 J         108-90-7Chlorobenzene       17 UJ         100-41-4Ethylbenzene       17 UJ         100-42-5	79-00-51 1 2-Trichloroethane			12
108-10-14-Methyl-2-Pentanone       33 U         591-78-62-Hexanone       33 U         127-18-4Tetrachloroethene       9 J         79-34-51,1,2,2-Tetrachloroethane       17 U         108-88-3Toluene       4 J         108-90-7Chlorobenzene       17 UJ         100-41-4Ethylbenzene       17 UJ         100-42-5	71-43-2			1 3
108-10-14-Methyl-2-Pentanone       33 U         591-78-62-Hexanone       33 U         127-18-4Tetrachloroethene       9 J         79-34-51,1,2,2-Tetrachloroethane       17 U         108-88-3Toluene       4 J         108-90-7Chlorobenzene       17 UJ         100-41-4Ethylbenzene       17 UJ         100-42-5				14
108-10-14-Methyl-2-Pentanone       33 U         591-78-62-Hexanone       33 U         127-18-4Tetrachloroethene       9 J         79-34-51,1,2,2-Tetrachloroethane       17 U         108-88-3Chlorobenzene       17 UJ         100-41-4Ethylbenzene       17 UJ         100-42-5Styrene       17 UJ				70
591-78-62-Hexanone       33 U         127-18-4Tetrachloroethene       9 J         79-34-51,1,2,2-Tetrachloroethane       17 U         108-88-3Toluene       4 J         108-90-7Chlorobenzene       17 UJ         100-41-4Ethylbenzene       17 UJ         100-42-5Styrene       17 UJ				1
127-18-4Tetrachloroethene       9 J         79-34-51,1,2,2-Tetrachloroethane       17 U         108-88-3Toluene       4 J         108-90-7Chlorobenzene       17 UJ         100-41-4Ethylbenzene       17 UJ         100-42-5Styrene       17 UJ				·
79-34-51,1,2,2-Tetrachloroethane       17 U         108-88-3Toluene       4 J         108-90-7Chlorobenzene       17 UJ         100-41-4Ethylbenzene       17 UJ         100-42-5Styrene       17 UJ				N
108-88-3Toluene       4 J         108-90-7Chlorobenzene       17 UJ         100-41-4Ethylbenzene       17 UJ         100-42-5Styrene       17 UJ		- 1		
108-90-7Chlorobenzene 17 UJ 100-41-4Ethylbenzene 17 UJ 100-42-5Styrene 17 UJ		Į.		1
100-41-4Ethylbenzene 17 Uf 100-42-5Styrene 17 Uf		— — — — — — — — — — — — — — — — — — —		
100-42-5Styrene 17 U5			_	}
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# 1B

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

1004
17A1

EPA SAMPLE NO.

Lab	Name: AQUATEC,	INC.	Contract:91000
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Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_\_ SDG No.: 15A1

Matrix: (soil/water)WATER Lab Sample ID: 134930

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134930DV

Level: (low/med) LOW Date Received: 05/21/91

Date Analyzed: 05/29/91 % Moisture: not dec.\_\_\_\_

Dilution Factor: 3.333 Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: 1 (ug/L or ug/Kg)UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.109-99-9	TETRAHYDROFURAN	8.80	200	J
3				
5				
7				
8				
10.				
11.				
14.				
15.				
1.				
18.				
21.				
22.				
24.				
25.				
27.				
29. 30.				

EPA SAMPLE NO.

18A1
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Lab Name: AQUATEC, INC.

Contract:91000

Lab Code: AQUAI Case No.: 26425 SAS No.: \_\_\_\_ SDG No.: 15A1

Matrix: (soil/water) WATER Lab Sample ID: 134937

Sample wt/vol:

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5.0 (g/mL)ML Lab File ID: E134937DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_ Date Analyzed: 05/29/91

Column: (pack/cap) PACK Dilution Factor: 3.333

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg)G/L Q

74-87-3Chloromethane       33 U         74-83-9Bromomethane       33 U         75-01-4Vinyl Chloride       240         75-00-3	
74-83-9Bromomethane       33       U         75-01-4Vinyl Chloride       240         75-00-3Chloroethane       33       U         75-09-2	L .
75-01-4	L .
75-00-3	-
75-09-2	L
67-64-1	
75-15-0	
75-35-41,1-Dichloroethene       17 U         75-34-31,1-Dichloroethane       17 U         540-59-01,2-Dichloroethene (total)       550         67-66-3Chloroform       17 U         107-06-21,2-Dichloroethane       17 U         78-93-32-Butanone       17 U         71-55-61,1,1-Trichloroethane       17 U         108-05-4Vinyl Acetate       17 U         75-27-4	
75-34-31,1-Dichloroethane       17 U         540-59-01,2-Dichloroethene (total)       550         67-66-3Chloroform       17 U         107-06-21,2-Dichloroethane       17 U         78-93-32-Butanone       17 U         71-55-61,1,1-Trichloroethane       17 U         56-23-5Carbon Tetrachloride       17 U         108-05-4Vinyl Acetate       17 U         75-27-4Bromodichloromethane       17 U         78-87-51,2-Dichloropropane       17 U         10061-01-5cis-1,3-Dichloropropene       17 U         79-01-6Trichloroethene       370         124-48-1Dibromochloromethane       17 U	
540-59-01,2-Dichloroethene (total)       550         67-66-3Chloroform       17         107-06-21,2-Dichloroethane       17         78-93-32-Butanone       17         71-55-61,1,1-Trichloroethane       17         56-23-5Carbon Tetrachloride       17         108-05-4Vinyl Acetate       17         75-27-4Bromodichloromethane       17         10061-01-51,2-Dichloropropane       17         10061-01-5	
67-66-3	
107-06-21,2-Dichloroethane       17 U         78-93-32-Butanone       33 W (         71-55-61,1,1-Trichloroethane       17 U         56-23-5Carbon Tetrachloride       17 U         108-05-4Vinyl Acetate       33 W (         75-27-4Bromodichloromethane       17 U         78-87-51,2-Dichloropropane       17 U         10061-01-5cis-1,3-Dichloropropene       17 U         79-01-6Trichloroethene       370         124-48-1Dibromochloromethane       17 U	- 1
78-93-32-Butanone       33 8 6         71-55-61,1,1-Trichloroethane       17 U         56-23-5Carbon Tetrachloride       17 U         108-05-4Vinyl Acetate       33 8 6         75-27-4Bromodichloromethane       17 U         78-87-51,2-Dichloropropane       17 U         10061-01-5cis-1,3-Dichloropropene       17 U         79-01-6Trichloroethene       370         124-48-1Dibromochloromethane       17 U	
71-55-61,1,1-Trichloroethane 17 U 56-23-5Carbon Tetrachloride 17 U 108-05-4Vinyl Acetate 33 U F 75-27-4Bromodichloromethane 17 U 78-87-51,2-Dichloropropane 17 U 10061-01-5cis-1,3-Dichloropropene 17 U 79-01-6Trichloroethene 370 17 U 124-48-1Dibromochloromethane 17 U	,  -
56-23-5Carbon Tetrachloride       17 U         108-05-4Vinyl Acetate       33 U F         75-27-4Bromodichloromethane       17 U         78-87-51,2-Dichloropropane       17 U         10061-01-5cis-1,3-Dichloropropene       17 U         79-01-6Trichloroethene       370         124-48-1Dibromochloromethane       17 U	-
108-05-4Vinyl Acetate       33 U f         75-27-4Bromodichloromethane       17 U         78-87-51,2-Dichloropropane       17 U         10061-01-5cis-1,3-Dichloropropene       17 U         79-01-6Trichloroethene       370         124-48-1Dibromochloromethane       17 U	
75-27-4Bromodichloromethane 17 U 78-87-51,2-Dichloropropane 17 U 10061-01-5cis-1,3-Dichloropropene 17 U 79-01-6Trichloroethene 370 124-48-1Dibromochloromethane 17 U	
78-87-51,2-Dichloropropane 17 U 10061-01-5cis-1,3-Dichloropropene 17 U 79-01-6Trichloroethene 370 17 U	-
10061-01-5cis-1,3-Dichloropropene	ĺ
79-01-6Trichloroethene	1
124-48-1Dibromochloromethane   17 U	ł
17 U	
79-00-5	- 1
1,1,2 1110H1010CCHdHC	1
71-43-2Benzene17 U	- 1
17 U	ł
75-25-2Bromoform 17 U	
108-10-14-Methyl-2-Pentanone 33 U	
591-78-62-Hexanone 33 U	1
127-18-4Tetrachloroethene   11 J	
79-34-51,1,2,2-Tetrachloroethane 17 U	
108-88-3Toluene 8 J	}
108-90-7Chlorobenzene 17 U	
17 U	
17 U	
1330-20-7Xylene (total) 17 U	
	1

TENTATIVELY IDENTIFIED COMPOUNDS

18 <b>A</b> 1		

EPA SAMPLE NO.

Lab Name: AQUATEC, INC.

Contract:91000

Lab	Code:	AQUAI	Case No.:	26425	SAS No.:		SDG No.	.: 15A	ı
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Matrix: (soil/water) WATER Lab Sample ID: 134937

Sample wt/vol: 5.0 (g/mL)ML Lab File ID: E134937DV

Level: (low/med) LOW Date Received: 05/21/91

% Moisture: not dec.\_\_\_\_\_ Date Analyzed: 05/29/91

Dilution Factor: 3.333 Column: (pack/cap) PACK

> CONCENTRATION UNITS: (ug/L or ug/Kg)UG/L

Number TICs found: 0

1.       2.         3.       4.         5.       6.         7.       8.         9.       9.         10.       11.         12.       13.         14.       15.         16.       17.         18.       19.         20.       21.         22.       23.         24.       25.         26.       27.         28.       29.         30.       9.			Τ	T	Τ
1.       2.         3.       4.         5.       6.         7.       8.         9.       10.         11.       12.         13.       14.         15.       16.         17.       18.         19.       20.         21.       22.         23.       24.         25.       26.         27.       28.         29.       30.	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
2 .	i		========		
3.       ————————————————————————————————————	2				
5.       6.         7.       8.         9.       10.         11.       12.         13.       14.         15.       16.         17.       18.         19.       20.         21.       22.         23.       24.         25.       26.         27.       28.         29.       30.	3		ļ		
6.       7.         8.       9.         10.       11.         11.       12.         13.       14.         15.       16.         17.       18.         19.       20.         21.       22.         23.       24.         25.       26.         27.       28.         29.       30.	5.				
7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30.	6				
10.	7.				
11.	8				
112.       13.       14.       15.       16.       17.       18.       19.       20.       21.       22.       23.       24.       25.       25.       26.       27.       28.       29.       30.	10				
112. 113. 114. 115. 116. 117. 118. 119. 220. 221. 222. 233. 244. 255. 266. 277. 28. 29. 30.					
15.	14.				
15. 16. 17. 18. 19. 20. 21.  22. 23. 24. 25. 26. 27. 28. 29. 30.	<u> </u>				
17. 18. 19. 20. 21.  22. 23. 24. 25. 26. 27. 28. 29. 30.	15.				
18.         19.         20.         21.         22.         23.         24.         25.         26.         27.         28.         29.         30.	10.				
20. 21.  22. 23.  24.  25.  26.  27.  28.  29.  30.	<b>-</b> / •				
21.       22.       23.       24.       25.       26.       27.       28.       29.       30.	1J.				
21. 22. 23. 24. 25. 26. 27. 28. 29. 30.	20.				
24. 25. 26. 27. 28. 29.	41.				
25. 26. 27. 28. 29.	43.				
26. 27. 28. 29. 30.	44.				
28. 29. 30.	45.				
29.	27.				
30.	20				
50,	49.				
	30		<del>  </del>		

Lab Name: Aquat	ec, Inc. Contrac	et:91000	15C1
Lab Code: <u>AOUAI</u>	Case No.: <u>26425</u>	SAS No.: SDG	No.:15A1
Matrix: (soil/wate	r) <u>Water</u>	Lab Sample ID:	134909
Sample wt/vol:		Lab File ID:	G134909V
Level: (low/med)	LOW	Date Received:	05/21/91
		Date Analyzed:	05/21/91
Column: (pack/cap	) <u>CAP</u>	Dilution Factor	:1.0
		CONCENTRATION UNITS	i •

CAS NO. COMPOUND  $(ug/L or ug/Kg) \underline{ug/L}$ Q 75-71-8-----<del>Biohlorodifluoromothano</del> 75-01-4-----Vinyl Chloride UJ 0.5 74-83-9-----<del>Dromomethans</del> 75-00-3-----Chloroethane 0.9 75-69-4----- Trichlerofluoromethane 75-35-4----1,1-Dichloroethene\_ 0.5  $\Omega J$ 

67-64-1-----<del>lectore</del> 75-09-2----Methylene Chloride 0.5 υJ UĴ 156-60-5-----trans-1, 2-Dichloroethene\_ 0.5 UJ 75-34-3-----1,1-Dichloroethane\_ 0.5 590-20-7-----<del>272-Dichleroprepanc</del>\_ UJ 156-59-4----cis-1,2-Dichloroethene 0.5 74-97-5----<del>Dromochloromethane</del> <del>0.5</del> 0.5 67-66-3-----Chloroform U I

 107-06-2-----1, 2-Dichloroethane
 0.5
 UJ

 79-01-6-----Trichloroethene
 0.8
 BUJ

 78-87-5-----1, 2-Dichloropropane
 0.5
 UJ

 74-95-3-----Bromodichloromethane
 0.5
 UJ

 10061-01-5-----cis-1, 3-Dichloropropene
 0.5
 UJ

Lab Name: Aquatec, Inc. Contract: 91000		15C1	
Lab Code: AOUAI Case No.: 26425 SAS No.:	_ SDG No	).: <u>1</u> 5	λ1
Matrix: (soil/water) <u>Water</u> Lab Samp	le ID:	134909	<u>)</u>
Sample wt/vol: <u>25 (g/mL) mL</u> Lab File	TD•	G134900	177
Sample we/ vol(g/mb/		0134303	<u>v</u>
Level: (low/med) LOW Date Reco	eived:	05/21/	91
Date Ana	lyzed:	05/21/	91
Column: (pack/cap)CAP Dilution	Factor:	1	. 0
CONCENTRATION CAS NO. COMPOUND (ug/L or ug/Kg)		-	Q
			1
142-28-9	=	0.5	
124-48-1Dibromochloromethane	_	0,5	UJ
106-93-4 <del>ly3-Dibroneothene</del>		<del></del>	
591-78-6 <del>8-Немаполо</del>	= ====		
108-90-7Chlorobenzene		0.5	UJ
630-20-6		<del>0.5</del>	05
100-41-4Ethylbenzene	_	0.5	03
1330-20-7Xylene (total) 100-42-5 <del>Styrene</del>		0.5	( <del></del>
75-25-2Bromoform		0.5	<b>U</b> 3
98-82-8 <del>Teepropylbensons</del>		0.5	<del>-8-</del>
108-86-1		0.5	
96-18-4 <del>172,3 Trichlerspropane</del>			
79-34-51,1,2,2-Tetrachloroethane		0.5	UJ
103-65-1		0.5	
95-49-8 <del>0 Chlorotoluono</del>		0.5	
106-43-4 <del>4 Chlorotoluenc</del>		<b>≯</b> 15	-80
108-67-8		-0.5-	
98-06-6		0.5	
95-63-6 <del>1,2,1 Trinothylbonsons</del>		0.5	
135-98-8 <del>cce Dutylbenzenc</del>		0.5	
541-73-1 <del>1,3 Dichlorobensons</del>		9.5	
106-46-7	_	-0-5-	
99-87-6 <del>d-Isspuspylbslusns</del>		0.5	
95-50-1 <del>1/2 Dishlerebensens</del>		0.5	
104-51-8 <del>n Dubylbensone</del>	+	-0-5-	

FORM I VOA-2

87-68-3-----<del>Womachlersbutadions</del>

Lab Name: <u>Aquatec</u>	. Inc. Contract:		15C1RE
Lab Code: AOUAI	Case No.: <u>26425</u> SAS No.	SDG No.	: <u>15A1</u>
Matrix: (soil/water)	Water	Lab Sample ID:	134909R1
Sample wt/vol:		Lab File ID:G	1·34909I2V
Level: (low/med)	LOW	Date Received:	05/21/91
		Date Analyzed:	05/22/91
Column: (pack/cap)	CAP	Dilution Factor: _	1.0
	, CON	CENTRATION INTES	

COMPOUND CAS NO.  $(ug/L or ug/Kg) \underline{ug/L}$ Q 75-71-8-----Dichloredifluorenethane 74-87-3------<del>Chloromethane</del>---<del>0. 5</del> 75-01-4-----Vinyl Chloride\_ υJ 0.5 74-83-9------Brononcthane 75-00-3-----Chloroethane 75-69-4------Trichlorofluoromethano 75-35-4-----1,1-Dichloroethene\_ 0.5 75-15-0------ Carbon Disulfide 67-64-1-----<del>%cetono</del> 75-09-2----Methylene Chloride Uj 156-60-5----trans-1,2-Dichloroethene\_ 0.5 75-34-3-----1,1-Dichloroethane\_ 0.5 UJ 156-59-4----cis-1,2-Dichloroethene\_ 0.5 บป 74-97-5------ Bronochlorenethans\_\_\_\_ 67-66-3-----Chloroform U. 0.5 71-55-6----1,1,1-Trichloroethane\_ 0.2 56-23-5-----Carbon Tetrachloride 0.5 UJ UI 71-43-2----Benzene\_ 0.5 107-06-2----1,2-Dichloroethane\_ Uí 0.5 79-01-6-----Trichloroethene JBILL 0.4 0.5 78-87-5-----1,2-Dichloropropane\_ UJ 74-95-3-----<del>Dibromomethane</del> 9-5 75-27-4-----Bromodichloromethane 0.5 びご UJ 10061-01-5----cis-1,3-Dichloropropene\_ 0.5 108-88-3-----Toluene\_ B 10061-02-6----trans-1,3-Dichloropropene\_ 0.5 υĴ 108-10-1-----<del>4 Methyl 2 Pentanone\_\_</del> 79-00-5----1,1,2-Trichloroethane\_ 0.5 U 127-18-4-----Tetrachloroethene\_ UJ 0.5

Lab Name: Aquatec, Inc. Contract: 91000	15C1RE
Lab Code: AOUAI Case No.: 26425 SAS No.:	SDG No.: 15A1 -
Matrix: (soil/water) <u>Water</u> Lab Sample 1	ID: <u>134909R1</u>
Sample wt/vol: 25 (g/mL) mL Lab File ID:	-G13490912V
Level: (low/med) LOW Date Receive	ed: 05/21/91
Date Analyze	ed: <u>05/22/91</u>
Column: (pack/cap) <u>CAP</u> Dilution Fac	tor:1.0
CONCENTRATION UN CAS NO. COMPOUND (ug/L or ug/Kg)	
142-28-9	0.8 .54
124-48-1Dibromochloromethane	0.5
106-93-4	0.5
591-78-6 <del>2 liexanone</del>	
108-90-7Chlorobenzene	0.5
630-20-6 <del>lylyly2 Tetrachlerecthane</del>	
100-41-4Ethylbenzene	0.5
1330-20-7Xylene (total)	0.5
100-42-5Bromoform	
98-82-8	0.5
108-86-1	
96-18-4 <del>1/2/3 Trichloropropane</del>	
79-34-51,1,2,2-Tetrachloroethane	0.5 UJ
103-65-1	0.5
95-49-8 <del>8 Chlorotolueno</del>	
106-43-4 <del></del>	2.5
108-67-8 <del>1,9,5 Trimethylbensene</del>	0/5
98-06-6 <del>tert Dutylbensene</del>	0.5
95-63-6	0.5
135-98-8	9.5
541-73-1 <del>1/3 Dichlorobenzenc</del>	9.5
106-46-7 <del></del>	9.5
99-87-6 <del></del>	0.5
95-50-1 <del>ly3-Dichlerchensens</del>	0.75
104-51-8 <del>n-Butylbonsons</del>	215
96-12-8 <del>1/3 Dibromo 3 chloropropanc</del>	0.5
120-82-1	9.5
91-20-3 <del>Naphthalene</del>	9.5
87-68-3 <del>Hexachlorobutadiene</del>	185.5

FORM I VOA-2

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	•	0t		15C1F	Œ1
Lab Name:	Aquatec, Inc.	Contract: 91000	<u></u>  -		
Lab Code: _	AQUAI Case No.:	26425 SAS No.: _	SI	OG No.:1	.5A1 -
Matrix: (soi	l/water) <u>Water</u>	Lab	Sample II	D: <u>13490</u>	9R2
Sample wt/vo	1: <u>25</u> (g/r	oL) <u>mL</u> Lab	File ID:		90V
Level: (low	/med) <u>LOW</u>	Dat	e Received	i: <u>05/21</u>	/91
		Dat	e Analyzed	i: <u>05/22</u>	/91
Column: (pa	ck/cap) <u>CAP</u>	Dil	ution Fact	or:	1.0
	•		RATION UNI	_	
CAS NO	. COMPOUN	D (ug/L or	ug/Kg) <u>u</u>	ig/L	Q
75 71	-8Dichloro	difluoromothane			
75-71	-3Chlorome	thane			-[
74-67	-4Vinyl Ch	loride			-
75-01	-CPromomot	.pane			-
74-83	-9Bromomet -3Chloroet	hane		<del></del>	-)
75-00	-3Cnioroet	nane			-
75-69	-4Trichlor	ortuoromethane			-1
75-35	-41,1-Dich	Toroethene		<del></del>	-
	-0Carbon D				-I <i>-</i> \
•	-1Acetone_				-
75-09	-2Methylen 0-5trans-1, -31,1-Dich	e Chloride		<del></del>	-
156-60	)-5trans-1,	2-Dichloroethene	_		-
75-34-	-31,1-Dich	loroethane		0.2	
	)-72,2-Dich				_
	9-4cis-1,2-			<del></del>	
	-5Bromochl				_]]
67-66-	-3Chlorofo	<u></u>			
71-55-	-61,1,1-Tr	ichloroethane		0.4	
	-5Carbon T				
	-32-Butano				_
	8-61,1-Dich				
71-43-	-2Benzene_	-			
	5-21,2-Dich	loroethane			]
	6Trichlor			0.2	B5 4
	51,2-Dich				-1
	3Dibromom				1
, , ,	4Bromodic				
	01-5cis-1,3-				-
	-3Toluene				-11
	02-6trans-1,	3-Dichloropropere	<del></del>		-1
_	-14-Methyl	• • •		<del></del>	-1
					-
	51,1,2-Tr		<del></del>		
127-18	-4Tetrachle	roetueue			-

Lab Na	me: <u>Aquatec</u>	. Inc.	Contract:	91000	15011	RE1
Lab Co	ode: <u>AOUAI</u>	Case No.: _20	6425_ SAS No	o.:	SDG No.:	1531 -
Matrix	:: (soil/water)	<u>Water</u>		Lab Sample	■ ID: <u>1349</u> 0	09R2
Sample	wt/vol:	(g/mL)	<u>mL</u>	Lab File 1	ID: <u>-G13490</u>	)90V
Level:	(low/med)	LOW		Date Recei	ived:05/21	1/91
					zed: <u>05/22</u>	
Column	: (pack/cap)	<u>CAP</u>		Dilution F	actor:	1.0
, 	CAS NO.	COMPOUND		CENTRATION or ug/Kg)		Q
	142-28-9	1,3-Dichlo	ropropane			_
	124-48-1	Dibromochl	.oromethane		.	
1	106-93-4	1,2-Dibrom	oethane			_
	591-78-6					_
	108-90-7				·] <del></del>	_
	630-20-6	1,1,1,2-Te	tracnioroetn	ane	·	-
	100-41-4	Etnylpenze	ne		ļ	-
i	1330-20-7	xylene (to	tal)			-]
	100-42-5	Styrene				-
	75-25-2	mroromora				-
	98-82-8	Isopropylo	enzene			-[
İ	108-86-1 96-18-4	bromopenze	ne			-
-	79-34-5	1,2,3-111C	urocobcobane			-
[	103-65-1	I,I,Z,Z-Ie	Trachioroeth	ane	<del></del>	-
	95-49-8	3-Chloroto	luono		<del></del>	-
	106-43-4	4-Chloroto	luene			-
	108-67-8					-
	98-06-6	tort-Butvl	benzene	· · · · · · · · · · · · · · · · · · ·		-
	95-63-6	1 2 A-Trim	ethylhenzene	<del></del>		-
	135-98-8	sec-Butvlh	enzene			-
	541-73-1					_
	106-46-7			<del></del>		-
	99-87-6				-	-
	95-50-1					-
	104-51-8					-
	96-12-8			opane		-
	120-82-1					-
	91-20-3					-
	87-68-3					-
	87-61-6					
- 1						

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Lab Name: <u>Aquatec</u>	. Inc. Contract:	91000
Lab Code: <u>AQUAI</u>	Case No.: <u>26425</u> SAS N	O.: SDG No.:15A1
Matrix: (soil/water)	Water	Lab Sample ID:134920
Sample wt/vol:		Lab File ID: G134920I2V
Level: (low/med)	LOW	Date Received: 05/21/91
		Date Analyzed: 06/03/91
Column: (pack/cap)	CAP	Dilution Factor: 1.0
		NCENTRATION UNITS:

CAS NO. COMPOUND  $(ug/L \text{ or } ug/Kg) \underline{ug/L}$ Q 75-71-8----- Dichleredifluorenethane 74-87-3-----Ghloremothane-75-01-4-----Vinyl Chloride\_ U 0.5 74-83-9----- Bromomethane-75-00-3-----Chloroethane 0.5 U 75-69-4----- Trichlorofluoromethan 75-35-4-----1,1-Dichloroethene\_ 0.5 75-15-0------Carbon Diculfide 67-64-1-----<del>Asstono</del>\_ 75-09-2----Methylene Chloride 156-60-5-----trans-1,2-Dichloroethene\_ 0.5 1/8 75-34-3-----1,1-Dichloroethane\_ 0.5 156-59-4----cis-1, 2-Dichloroethene\_ 0.5 74-97-5-----Bromochloromothano U 67-66-3-----Chloroform 0.5 71-55-6----1,1,1-Trichloroethane 0.5 U r56-23-5-----Carbon Tetrachloride\_ 0.5 U 78-93-3-----<del>C-Dutanone\_</del> 563-58-6----<del>lyl-Dichleropropenc</del> 71-43-2-----Benzene 0.5 107-06-2----1, 2-Dichloroethane U 0.5 79-01-6-----Trichloroethene\_ J 0.5 U 78-87-5-----1, 2-Dichloropropane\_ 74-95-3-----<del>Dibuonomethene</del> 75-27-4-----Bromodichloromethane\_ 0.5 U 10061-01-5----cis-1,3-Dichloropropene\_ 0.5 U 108-88-3-----Toluene\_ U 0.5 10061-02-6----trans-1,3-Dichloropropene\_ U 0.5 108-10-1----- 4-Methyl 2 Pentanone\_ 79-00-5----1,1,2-Trichloroethane\_ 0.5 U 127-18-4----Tetrachloroethene\_ 0.5 U

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		The Control	01000	TRIP BLA	NK
Lab	Name: Aquatec	. Inc. Contra	GE:91000		
Lab	Code: <u>AQUAI</u>	Case No.: <u>26425</u>	SAS No.:	SDG No.:15	A1
Matr	ix: (soil/water)	Water	Lab Sample	ID:134920	)
<b>2</b>	? /	25 /2/-1) -1	rat Bila Tr		
Samp	TE MC/AOT:		Lab File II	<u> </u>	120
Leve	l: (low/med)	LOW	Date Receiv	red: <u>05/21/</u>	91
		•	Date Analyz	ed:06/03/	91
			_		
Colu	nn: (pack/cap)	CAP	Dilution Fa	ctor:1	.0
				NTMO.	
	CAS NO.	COMPOUND	CONCENTRATION U (uq/L or ug/Kg) _		0
	CAS NO.	COMPOUND	(ug/L or ug/kg) _	<u> uu/ L</u>	Q
			J	······	
	142-28-9	<del></del>	ene	0.5	
į	124-48-1	Dibromochlorome	thane	0.5	U
		<del>1,3-Dibronoctha</del> :	10	<del></del>	
		<del>-2 lionanono</del>			
		Chlorobenzene		0.5	<u> </u>
	630-20-6		roroethane		
	100-41-4	Ethylbenzene		0.5	<u>  U</u>
	1330-20-7	Xylene (total)_		0.5	<u> </u>
		Otyrene		0.5	
	75-25-2			0.5	<u> </u>
		Lcopropylbonson		0.5	
- 1		Bronchongono-			
ĺ	96-18-4	<del>1,2,3 Trichloro</del>	ropane	<del></del>	- ;;
}		1,1,2,2-Tetrachl		0.5	<u>""</u>
- 1		<del>n-Propylbonzono</del> -		0.5	
ł				0.5	
1		1-2 5-Trimothyl		0.5	
Ì		<del>test-Dutylbenser</del>		<del></del>	
		1 2 4 Mmimabhaalh		0.5	
]	95-63-6 135-98-8			0.5	
[	541-73-1			0.5	
1	106-46-7	- A Dichlershone		0.5	<u></u>
į.				0.5	
1	99-87-6	1-2-Dichlerehons		0.5	
-	104-51-8	- Public I have a		• • • • • • • • • • • • • • • • • • •	
-	96-12-8	<del>1-2 Dibromo 3 ch</del>		0.5	
}	120-82-1		Toropropane	0.5	
1	91-20-3	<del>1,2,4 Trichlorob</del>	CITE CITE	0.5	77
]	87-68-3				
j	87-61-6			0.5	
	J, J, J				

FORM I VOA-2

Lab Name:Aquatec	. Inc. Contra	V140 VII FS
Lab Code: <u>AQUAI</u>	Case No.: <u>26425</u>	SAS No.: SDG No.:15A1
Matrix: (soil/water)	Water	Lab Sample ID: 134922
Sample wt/vol:		Lab File ID: G134922I2V
Level: (low/med)	LOW	Date Received: 05/21/91
		Date Analyzed: 06/03/91
Column: (pack/cap)	CAP	Dilution Factor: 1.0
CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L Q
75-71-8	Dichlorodifluor	omothano 0.5 U

75-71-8	Dighlorodifluoromothano		
74-87-3	Chloremethane	0.5	1
75-01-4	Vinyl Chloride	0.5	U
74-83-9	Bromomethane	0,5	- "
75-00-3	Chloroethane	0.5	U
75-69-4	Trichlorofluoromethane	0.5	- 0
5-35-4	1,1-Dichloroethene	0.5	U
75-15-0	Carbon Diculfido	0.5	- "
–	Acctons		
	Methylene Chloride	1	B 4
	trans-1,2-Dichloroethene	0.5	<u>U</u>
5-34-3	1,1-Dichloroethane	0.5	U_U
90-20-7	3,2 Dishlereprepane		- V
56-59-4	cis-1,2-Dichloroethene	0.5	U
4-97-5	Bromochloromothano	0.5	77
7-66-3	Chloroform	0.5	U
1-55-6	1,1,1-Trichloroethane	0.5	U
6-23-5	Carbon Tetrachloride	0.5	U
		5	· ·
63-58-6	<del>l,1-Dishlereprepene</del>	0.5	17
1-43-2	Benzene	0.5	U
07-06-2	1,2-Dichloroethane	0.5	U
9-01-6	Trichloroethene	0.3	8 4
8-87-5	1,2-Dichloropropane	0.5	U
4-95-3	Dibrememethane		
5-27-4	Bromodichloromethane	0.5	U
0061-01-5	cis-1,3-Dichloropropene	0.5	U
08-88-3	Toluene	0.5	บ
	trans-1,3-Dichloropropene	0.5	U
08-10-1	4 Mothyl & Pentanone	<del></del>	U
	1,1,2-Trichloroethane	0.5	U
9-00-5	i, i, z-ii ichibi bechane		U

					_ <del></del>	
Lab :	Name: <u>Aquatec</u>	. Inc. Contra	act: <u>9</u>	1000	V140 VI	II FS
Lab	Code: <u>AQUAI</u>	Case No.: <u>26425</u>	SAS No	.:	SDG No.:15	5A1
Matr	ix: (soil/water)	<u>Water</u>		Lab Sample	ID: <u>134922</u>	
Samn	le wt/vol:				D: <u>G134922</u>	
Jump.	20 40, 1021		-			
Leve	l: (low/med)	LOW		Date Receiv	ved:05/21/	91
				Date Analy:	zed: <u>06/03/</u>	91
Colu	mn: (pack/cap)	CAP		Dilution Fa	actor:1	. 0
	CAS NO.	COMPOUND	_	CENTRATION ( or ug/Kg) _		Q
		<del>ky3 Dichlerepre</del>			<del>- 0.5</del>	
	124-48-1	Dibromochlorome	thane	<del></del>	0.5	<u> </u>
ĺ	106-93-4	<del>1,2-Dibremeethe</del>	# <del>************************************</del>		0, <u>5</u>	-
		3-Honanono				
		Chlorobenzene	7		0.5	<u> </u>
	630-20-6	<del>Y,1,1,2 Totrach</del>	+orecon	17.0	<u> </u>	
	100-41-4	Ethylbenzene			0.5	<u> </u>
	1330-20-/	Xylene (total)_			0.5	<u> </u>
'		Styrono			<del></del>	
İ	75-25-2				0.5	<u>U</u>
- 1		Icepsopylbenson	<u> </u>		<del>0.5</del> _	-
İ		1,2,3 Trichlore			0,5	
ĺ	70 34-5	1,1,2,2-Tetrach	<del>jesepano</del> -		0.5	Ü
i		Tropylbensene			0.5	
- 1	10326521	2. Chloretelucio				
	106 42 4	2-Chlorotoluene		<del></del>	0.5	<u> </u>
- 1					0.5	<u> </u>
	TO8-0/-0	1,3,5-Trimethyl	penzene_		0.5	<u> </u>
ļ	98-U0-0	tert-Butylbenze	ne		0.5	<u> </u>
]	75-63-6	1,2,4-Trimethyl	penzen <b>e</b> _	<u>_</u>	0.5	<u> </u>
l	135-98-8	sec-Butylbenzen	e		0.5	<u> </u>
		1,3-Dichloroben:			0.5	U
	100-40-/	1,4-DICTIONODEN	zene		0.5	UI

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99-87-6-----4-Isopropyltoluene\_ 95-50-1-----1,2-Dichlorobenzene

87-68-3-----Heyachlorobutadiene

96-12-8----1,2-Dibromo-2 chloropropane\_

120-82-1----1,2,4-Trienlorobenzene\_

104-51-8----n-Butylbenzene

91-20-3----Naphtbalene

U

U

U

U

0.5

0.5

0.5

0.5

0.5

0.5

Lab Name: Aquateo	. Inc. Contrac	t: <u>91000</u>	16C1
Lab Code: AQUAI	Case No.: 26425	SAS No.: SE	OG No.: 15A1
Matrix: (soil/water)	Water	Lab Sample ID	134924
Sample wt/vol:		Lab File ID:	G124924I2V
Level: (low/med)	LOW	Date <u>Received</u>	:05/21/91
		Date Analyzed	:05/30/91
Column: (pack/cap)	CAP	Dilution Fact	or: <u>1.0</u>
CAS NO.	COMPOUND	CONCENTRATION UNI (ug/L or ug/Kg) <u>u</u>	

		1	1
75-71-8			
	<del>Chloromothano</del>	0.5	· ·
	Vinyl Chloride	0.5	U
	Bromomothano	0.5	- 0-
	Chloroethane	0.5	U
	Trichlerofluoromethane		
	1,1-Dichloroethene	0.5	U
	Carbon Diculfido	<del>0.5</del>	
67-64-1	<del>-laotono</del>	<del></del>	<del> </del>
75-09-2	Methylene Chloride	0.5	_80
	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	2,2-Dichloropropano	0.5	TI.
	cis-1,2-Dichloroethene	0.5	U
74-97-5	<del>Dremechleremethane</del>	0.5	من
67-66-3	Chloroform	0.5	U
71-55-6	1,1,1-Trichloroethane	0.5	ט
	Carbon Tetrachloride	0.5	บ
78-93-3	<del></del>	5	
563-58-6	1,1-Dichloropropono		
563-58-6 71-43-2	Benzene	0.5	<u>u</u> J
71-43-2	Benzene	0.5	<u>u</u> <u>u</u>
71-43-2 107-06-2	Benzene		U
71-43-2 107-06-2 79-01-6	Benzene 1,2-Dichloroethane Trichloroethene	0.5	U
71-43-2 107-06-2 79-01-6 78-87-5	Benzene	0.5	U BJ
71-43-2 107-06-2 79-01-6 78-87-5	Benzene	0.5 0.2 0.5	U BJ
71-43-2 107-06-2 79-01-6 78-87-5 74-95-3	Benzene	0.5 0.2 0.5 0.5	<u>ਬ</u> ਹ ਹ ਹ
71-43-2 107-06-2 79-01-6 78-87-5 74-95-3 75-27-4 10061-01-5	Benzene	0.5 0.2 0.5 0.5 0.5	U 280 U U U
71-43-2 107-06-2 79-01-6 78-87-5 74-95-3 75-27-4 10061-01-5	Benzene1,2-DichloroethaneTrichloroethene1,2-DichloropropaneBibromouthaneBromodichloromethanecis-1,3-Dichloropropene	0.5 0.2 0.5 0.5 0.5 0.5	#37 U U U U
71-43-2 107-06-2 79-01-6 78-87-5 74-95-3 75-27-4 10061-01-5 108-88-3	Benzene1,2-Dichloroethane1,2-Dichloropropane1,2-DichloropropaneBromodichloromethanecis-1,3-Dichloropropenetrans-1,3-Dichloropropene	0.5 0.2 0.5 0.5 0.5 0.5 0.5	0 0 0 0 0 0
71-43-2 107-06-2 79-01-6 78-87-5 74-95-3 10061-01-5 108-88-3 10061-02-6 108-10-1	Benzene1,2-DichloroethaneTrichloroethene1,2-DichloropropaneBibromouthaneBromodichloromethanecis-1,3-Dichloropropene	0.5 0.2 0.5 0.5 0.5 0.5 0.5	0 0 0 0 0

Lab Name: <u>Aquatec</u>	, Inc. Contra	ct: <u>     9</u>	1000	16C1	
Lab Code: AQUAI	Case No.: 26425	SAS NO	.:	SDG No. 1531	
Lab code		טאט אט	• • • • • • • • • • • • • • • • • • • •	300 NO	
Matrix: (soil/water)	Water		Lab Sample	ID: <u>134924</u>	
Sample wt/vol:			Lab File ID:	G124924I2V	
Level: (low/med)	LOW		Date Receive	ed: <u>05/21/91</u>	
			Date Analyze	ed: <u>05/30/91</u>	
Column: (pack/cap)	CAP		Dilution Fac	tor:1.0	
CAS NO.	COMPOUND		CENTRATION UN		ı
			1		—.

142-28-9	1 <del>/3 Bichleropropano</del>	-0.5	
124-48-1	Dibromochloromethane	0.5	U
		0.5	
591-78-6	<del>0-Nexanono</del>		₩
108-90-7	Chlorobenzene	0.5	UI
630-20-6	<del>1,1,1,2 Tetrachlerecthene</del>	-0.5	<u> </u>
100-41-4	Ethylbenzene	0.5	UJ
1330-20-7	Xylene (total)	0.5	UI
100-42-5	Etyrono	0.5	- 13-
75-25-2	Bromoform	0.5	U
98-82-8	<del>Beeprepy blensons</del>		
108-86-1	Bromohonzono		
96-18-4	<del>1,3,3 Trichloropropano</del>	0.5	
	1,1,2,2-Tetrachloroethane	0.5	<u> </u>
103-65-1	<del>a-Propylbonsons</del>	0.5	
95-49-8	2-Chlorotoluene	0.5	U
	4-Chlorotoluene		<u>U</u>
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	U
106-46-7	1,4-Dichlorobenzene	0.5	ี บ
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzen	0.5	
	n-Butylbenzene	0.5	U
6-12-8	1,2-Dibromo-2-chloropropane	0.5	U
	1,2,4-Trienlorobenzene	0.5	Ü
	Naphtbalene	0.5	U
	Heyachlorobutadiene	0.5	U
37-61-6		0.5	

Lab Name: Aquatec	. Inc. Contract: 9	16C2
Lab Code: AOUAI	Case No.: <u>26425</u> SAS No	.: SDG No.:15A1
Matrix: (soil/water)	Water	Lab Sample ID:134925 /
Sample wt/vol:		Lab File ID: <u>G124925I2V</u>
Level: (low/med)	LOW	Date Received:05/21/91
		Date Analyzed: 05/30/91
Column: (pack/cap)	CAP	Dilution Factor: 1.0
	CON	CENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Ko	g) <u>uq/L</u>	Q
	<del>Dichlopedifluoremethane</del>	2.5	-25-
	Chloromethano		
	Vinyl Chloride	0.5	UJ
	Bronomotheno	0.6	
	Chloroethane	0.5	01
	Prichlerofluorenethane	0.5	-17
	1,1-Dichloroethene	0.5	05
75-15-0	Curbon Disulfide		
67-64-1	<del>hectone</del>		
75-09-2	Methylene Chloride	0.8	BUJ
156-60-5	trans-1,2-Dichloroethene	0.5	UI
75-34-3	1,1-Dichloroethane	0.5	UJ
590-20-7	<del>-3,3-Dichleropropane</del>	9-5	
156-59-4	cis-1,2-Dichloroethene	0.5	UJ
74-97-5	Tromochlorenethane	0.5	
67-66-3	Chloroform	0.5	UJ
71-55-6	1,1,1-Trichloroethane	0.5	UJ
	Carbon Tetrachloride	0.5	UJ
•	2 Dutanone		
	1,1-Dichloropropono		
	Benzene	0.5	UJ
	1,2-Dichloroethane	0.5	UJ
	Trichloroethene	0.6	BUJ
	1,2-Dichloropropane	0.5	UI
	Dibyonomethane	\$.5	
	Bromodichloromethane	0.5	UT
	cis-1,3-Dichloropropene	0.5	UJ
108-88-3		0.5	UJ
	trans-1,3-Dichloropropene	0.5	UJ
	4-Mothyl-2-Pontanono	- 5	-0-
	1,1,2-Trichloroethane	0.5	UJ
	Tetrachloroethene	0.5	<u>n</u> 1

•	
Lab Name: Aquatec, Inc. Contract: 91000	16C2
Lab Code: AQUAI Case No.: 26425 SAS No.:	SDG No.: 15A1
Matrix: (soil/water) <u>Water</u> Lab Sample	ID: 134925
Sample wt/vol: 25 (g/mL) mL Lab File II	G124925I2V
Level: (low/med) LOW Date Receiv	ved: 05/21/91
Date Analyz	ed: <u>05/30/91</u>
Column: (pack/cap) <u>CAP</u> Dilution Fa	ctor:1.0
CONCENTRATION	
CONCENTRATION U CAS NO. COMPOUND (ug/L or ug/Kg) $\_$	
142-28-9 <del>1,2-Dichloreprepane</del>	25
124-48-1Dibromochloromethane	0.5 U J
106-93-4 <del>1,2-Dibromocthane</del>	9.5
591-78-6 <del>2 Hexanonc</del>	- 5 - <del>10</del>
108-90-7Chlorobenzene	0.5 UJ
630-20-6 <del>1,1,1,2 Tetrachlerocthane</del>	0.5
100-41-4Ethylbenzene	0.5 UJ
1330-20-7Xylene (total)	0.5 UT
100-42-5 <del>Styrens</del>	0.5
75-25-2Bromoform	0.5 0.5
98-82-8 <del>loopropylbensens</del>	015
108-86-1 Bromoberizene	
96-18-4 <del>1,2,3 Trichloropropunc</del>	0.5
79-34-51,1,2,2-Tetrachloroethane	0.5 UJ
103-65-1	0.5
95-49-82-Chlorotoluene	0.5
106-43-44-Chlorotoluene	0.5
108-67-81,3,5-Trimethylbenzene	9.5 U
98-06-6tert-Butylbenzene	0.5
95-63-61,2,4-Trimethylbenzene	0.5 U
135-98-8sec-Butylbenzene	<b>.0</b> ⋅.5 U
541-73-11,3-Dichlorobenzene	0.5 B
106-46-71,4-Dichlorobenzene	0.5 U
99-87-64-Isopropyltoluene	0.5 U
95-50-11,2-Dichlorobenzene	0.5 U
104-51-8n-Butylbenzene	0.5 U
96-12-81,2-Dibromo-2-chloropropane	0.5
120-82-11,2,4-Trienlorobenzene	0.5 X
91-20-3Naphtbalene	0.5 U
87-68-3Heyachlorobutadiene	0×5 U

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Lab Name: Aquatec	. Inc. Contract	<u> 91000</u>	16C3
Lab Code: <u>AQUAI</u>	Case No.: <u>26425</u> S	SAS No.: SDG N	lo.: <u>15A1</u>
Matrix: (soil/water)	Water	Lab Sample ID: _	134926
Sample wt/vol:	25(g/mL) _mL	Lab File ID: _	G134926V
Level: (low/med)	LOW	Date Received: _	05/21/91
		Date Analyzed: _	05/30/91
Column: (pack/cap)	CAP	Dilution Factor:	1.0
CAS NO	COMPOLIND	CONCENTRATION UNITS:	0

	(dg/1 of dg/Ng) <u>dg/1</u>		
	Dichlorodifluoromothans	0 <sub>+5</sub>	<del></del>
	Chloremothano	0.5	
	Vinyl Chloride	0.5	
74-83-9			
	Chloroethane	11	
75-69-4	Trichlerefluoremethane	0,5	
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	-ن-
67-64-1	Asetone	13	
75-09-2	Methylene Chloride	0.2	BJ
	trans-1,2-Dichloroethene	0.5	ַ
75-34-3	1,1-Dichloroethane_	0.5	Ū
	2,2-Dichlerepropane	0.5	- ;;
	cis-1,2-Dichloroethene	1	
	Brenechleremethane	0.5	
67-66-3		0.5	Ü
	1,1,1-Trichloroethane	0.5	U
	Carbon Tetrachloride	0.5	U
78-93-3			
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	- 1,1 Dichlereprepane	0.5	
71-43-2	Benzene	0.5	UJ
	1,2-Dichloroethane	0.5	U
	Trichloroethene	7	-8
	1,2-Dichloropropane	0.5	U
74-95-3	- Sibromomethane	0.5	<u></u>
	Bromodichloromethane	0.5	Ü
	cis-1,3-Dichloropropene	0.5	U
		0.5	TU
NB - BB - 3		1 0.01	
L08-88-3 L0061-02-6			
10061-02-6	trans-1,3-Dichloropropene	0.5	U
10061-02-6 108-10-1	trans-1,3-Dichloropropene	0.5	
10061-02-6 108-10-1 79-00-5	trans-1,3-Dichloropropene		

Lab Name: Aquatec, Inc. Contract: 91000	16C3	
Lab Code: AQUAI Case No.: 26425 SAS No.:	SDG No.:15	5A1
Matrix: (soil/water) <u>Water</u> Lab Sample	e ID:134926	<u>.                                    </u>
Sample wt/vol:25(g/mL) _mL Lab File :	ID: <u>G134926</u>	v
Level: (low/med) LOW Date Rece	ived:05/21/	91
Date Analy	/zed: <u>05/30/</u>	91
Column: (pack/cap) <u>CAP</u> Dilution 1	Factor:1	.0
CONCENTRATION CAS NO. COMPOUND (ug/L or ug/Kg)		Q
142-28-9 <del>1,3-Dichlerspropans</del>	0-E	
124-48-1Dibromochloromethane		U
106-93-4 <del>1,3-Dibrenesthane</del>	0.5	
591-78-6 <del>3-Hexanons</del>	5	
108-90-7Chlorobenzene_	0.5	UJ
630-20-6 <del>lylyly2 Tetrachlorocthane</del>	0.5	
100-41-4Ethylbenzene_	0.5	UJ
100-41-4Ethylbenzene_ 1330-20-7Xylene (total)	0.4	J
100-42-5 <del></del>	0.5	
75-25-2Bromoform	0.5	<u> </u>
98-82-8 <del>Leepwepylbensons</del>	0,5	<u> </u>
108-86-1	0,5	
96-18-4	-0.5	
79-34-51,1,2,2-Tetrachloroethane		<u>""</u>
	0.5	
95-49-82-Chlorotoluene		U
106-43-44-Chlorotoluene	0.5	U
108-67-81,3,5-Trimethylbenzene	0.5	<u> </u>
98-06-6tert-Butylbenzene	0.5	<u>U</u>
95-63-61,2,4-Trimethylbenzene	0.5	<u>U</u>
135-98-8sec-Butylbenzene	0.5	<u>U</u>
541-73-11,3-Dichlorobenzene	0.5	<u>U</u>
106-46-71,4-Dichlorobenzene	0.5	<u>U</u>
99-87-64-Isopropyltoluene	0.5	U
95-50-11,2-Dichlorobenzene	0.5	<u> </u>
104-51-8n-Butylbenzene	0.5	<u> </u>
96-12-81,2-Dibromo-2-chloropropane	0.5	<u>U</u>
120-82-11,2,4-Trienlorobenzene	0.5	<u>U</u>
91-20-3Naphthalene	0.5	<u>U</u>
87-68-3Hexachlorobutadiene	0.5	<u> </u>
87-61-6 <del>2,2,3-Trichlerobensene</del>	0.5	

FORM I VOA-2



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G & H PROJECT

AREAL SAMPLING

**VOLATILES ANALYSIS DATA** 

Samples Collected 5/16/91

Chemical Analyses Performed By:
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### EXECUTIVE SUMMARY

Detection limits for aromatic compounds were estimated in Samples UC18, FBUC18, FDUC18, CLUC18, S82, S81S, UC22, and TBB. Results for 2-butanone were rejected in all eight samples.

A low level of acetone in Sample S81S was qualified to none detected at the Contract Required Quantitation Limit (CRQL).

Problems identified on the Chain of Custody records include: (1) some of the corrections made to entries on the forms are made incorrectly, and do not include the date and/or initials; (2) the transfer signatures are incomplete: the first "Relinquished by" entry is not dated, and there is no signature indicating acceptance of the samples by the laboratory; (3) documentation of preservation is unclear, i.e. the meaning of a checkmark in the "VOA" column in the "Preservatives" section of the custody form is unknown, particularly when "(none)" is noted at the top of the column; and (4) separate entries should not be made on the custody record for MS/MSD samples.

Validation of organic data is conducted in conformance with U.S. Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses (February 1, 1988), with modifications by EPA Region I (November 1, 1988).

Based on the supporting documentation, qualifier codes as reported by the laboratory may be added, deleted, or modified by the data validator. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the referenced Functional Guidelines:

- U The material was analyzed for, but not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary forms and Form I's (copied from the data package) to qualify some of the results as appropriate based on the data review.



### Case Narrative

Ten groundwater samples (including separate samples for matrix spike and matrix spike duplicate analysis) were collected on May 16, 1991, and received by PACE, Inc. on May 17, 1991. The laboratory was requested to perform volatile organics analysis (VOA); the EPA Contract Laboratory Program (CLP) Statement of Work dated 2/88 was followed.

The following samples are included in this Sample Delivery Group:

Client ID	<u>Lab ID</u>	<u>Collection Date</u>
S82	3634	05/16/91
S81S	3635	05/16/91
UC18	3636	05/16/91
TBB	3637	05/16/91
CLUC18	3639	05/16/91
FBUC18	3640	05/16/91
UC22	3642	05/16/91
FDUC18	3643	05/16/91

Volatiles analysis results for these samples were reported by the laboratory under Project Number 810517.502.



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

Samples UC18, FDUC18, CLUC18, FBUC18, TBB, S82, S81S, and UC22 were analyzed beyond the 7-day holding time for samples that are not preserved with hydrochloric acid (HCl) in the field, but were all analyzed within 14 days of collection. Detection limits for all aromatic compounds (benzene, toluene, ethylbenzene, chlorobenzene, styrene, and xylenes) in these samples are qualified as estimated "UJ"; no positive results were reported for any of the aromatic compounds.

The chain of custody records indicate that the samples were "chilled", but this reference could be interpreted to be applicable only to Samples S82 and UC22, since it is recorded in the "Remarks" column for these two sample entries on each of the two custody forms. Care should be taken to clearly document activities as applicable to any or all samples on the custody form. The meaning and use of the "VOA" column in the "Preservatives" section of the custody form is also unclear. The box is checked for each sample entered on the form, but "(none)" has also been added to the column header. It has been assumed that the required VOA preservative, hydrochloric acid (HCl), was not used for the purposes of this validation.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

## A. Initial

The samples were analyzed under a single initial calibration, performed on 5/17/91. All criteria were met in this calibration with the exception of the response factor (RF) and Percent Relative Standard Deviation (%RSD) for 2-butanone (RF actual 0.03, criterion 0.10; %RSD actual 39.9, criterion 30). Results for 2-butanone are rejected, "R", in Samples UC18, CLUC18, FDUC18, FBUC18, TBB, S81S, S82, and UC22, due to reduced sensitivity as indicated by the very low RF for this compound.



### B. Continuing

Sample analyses were performed on instrument G on three separate analysis dates: 5/24, 5/25, and 5/27/91.

Continuing calibration criteria were met on 5/24/91 with the exception of the RF and Percent Difference (%D) for 2-butanone (RF actual 0.019, criterion 0.10; %D actual 34.4, criterion 25), and the %D for vinyl acetate (actual 31.2, criterion 25), and cis-1,3-dichloropropene (actual 41.3, criterion 25). No additional data are affected.

Continuing calibration criteria were met on 5/25/91 with the exception of the RF and %D for 2-butanone (RF actual 0.015, criterion 0.10; %D actual 50, criterion 25), and the %D for bromomethane (29.6 actual, criterion 25), chloroethane (27.9 actual, criterion 25), vinyl acetate (37.8 actual, criterion 25), and bromoform (actual 32.1, criterion 25). No additional data are affected.

Continuing calibration criteria were met on 5/27/91 with the exception of the RF for 2-butanone (actual 0.024, criterion 0.10), and the %D for acetone (actual 43.0, criterion 25) and vinyl acetate (actual 43.9, criterion 25). No additional data are affected.

#### IV. Blanks

Acetone was reported at 7 ug/L in VBLK02, and tetrachloroethene was reported at 3 ug/L in VBLK03; no target compounds or extraneous peaks were detected in VBLK01, the trip blank, or the field blank.

Acetone was detected at a very low level in only one sample (S81S); this value is qualified as none detected at the CRQL.

Tetrachloroethene was detected in all three of the sample analyses (S81S, UC18MS, and UC18MSD) performed in association with VBLK03 on 5/27; the PCE results reported for the MS/MSD were correctly flagged as "B" by the laboratory, but the value reported for S81S was not similarly flagged. All three of the reported PCE results are sufficiently high so as not to be attributable to blank contamination; they are, therefore, modified to unqualified positive results.

### V. Surrogate Recovery

All surrogate recoveries were within acceptable criteria.



# VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample UC18. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within acceptable limits.

### VII. Field Duplicates

Compounds and concentrations reported for Samples UC18, FDUC18, and CLUC18 were as follows:

Compound	<u>UC18</u>	FDUC18	CLUC18
1,2-Dichloroethenes	40 ppb, J	62 U	62 U
Tetrachloroethene	1700 ppb	1700 ppb	1900 ppb

Agreement between the results for tetrachloroethene in these three samples was very good; the inconsistent results observed for the 1,2-dichloroethenes is not surprising in view of the dilutions performed to keep tetrachloroethene within the linear range (1:12.5). No data are affected.

### VIII. Internal Standards Performance

Internal standard areas and retention times were within acceptable limits for all sample and QC analyses in this sample delivery group.

## IX. TCL Compound Identification

Reported TCL compound identifications were acceptable.

### X. Compound Quantitation and Reported Detection Limits

Samples UC18, FDUC18, CLUC18, UC22, and S82 were analyzed as dilutions to achieve tetrachloroethene results within the linear range of the instrument; no undiluted runs of these samples were reported or performed, per conversation with C. Corkey of PACE, Inc. The PCE concentrations reported in the diluted analyses were acceptable. Note that the Case Narrative in the data package refers to only two diluted sample runs, when five were, in fact, performed.

Contract Required Quantitation Limits (CRQL's) were appropriately adjusted to reflect the dilutions performed for each sample.



### XI. Tentatively Identified Compounds

No tentatively identified compounds (TIC's) were observed or reported in these samples.

### XII. System Performance

System performance was satisfactory throughout the analysis of these samples.

#### XIII. Overall Assessment

The sample results are usable as reported with the following qualifications and modifications:

Detection limits for the aromatic compounds were estimated in all eight samples.

Results for 2-butanone were rejected in all eight samples.

The acetone result reported for S81S is qualified as none detected at the CRQL, and the PCE results for UC18MS, UC18MSD, and S81S are unqualified.

Incomplete, unclear, or inaccurate Chain of Custody records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the custody record in this data package:

- 1. Corrections that are initialled/dated do not include the complete date they were made, and in two cases a "write-over" is used with no initials or date.
- 2. Transfer signatures are incomplete: the first "Relinquished by" signature is not dated, and no signature acknowledging receipt and acceptance by the laboratory is recorded.
- 3. Documentation of preservation is unclear, including the references to cold storage, and the use of the "VOA" column in the "Preservatives" section of the forms.
- 4. MS/MSD analyses are a <u>laboratory-initiated</u> quality control activity; there should not, therefore, be separate samples on the chain of custody identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.

EPA SAMPLE NO.

Lab Name: PACE

Contract:

.ab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3639.4

Lab File ID: G3120

Sample wt/vol: 0.5 -5. (g/mL) ML 'evel: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/25/01

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND	CONCENTRATION UNITS:  (ug/L or ug/Kg) UG/L Q
74-87-3Chloromethane	100.
1 74-83-9Bromomethane	100. 10
75-01-4Vinyl Chloride_	100. 10
75-00-3Chloroethane	100. 10
75-09-2Methylene Chlori	ide 50. IU
67-64-1Acetone	
75-15-0Carbon Disulfide	50. IU I
: 75-35-41,1-Dichloroethe	ene : 50. IU :
1 75-34-31,1-Dichloroetha	ane   50.  U
: 540-59-01,2-Dichloroeths	ene (total)_  50.  U
: 67-66-3Chloroform	50.  U
107-06-21,2-Dichloroetha	ane   50.  U _   100
78-93-32-Butanone	10010- K 10/2/4/
	thane   50.  U   1"
1 56-23-5Carbon Tetrachlo	oride   50.  U
1 108-05-4Vinyl Acetate	100. IU I
75-27-4Bromodichloromet	hane 50.  U
78-87-51,2-Dichloroprop	
110061-01-5cis-1,3-Dichloro	opropene 50. (U
79-01-6Trichloroethene	50. IU
124-48-1Dibromochloromet	hane 50.  U
79-00-51,1,2-Trichloroe	thane 50.  U
71-43-2Benzene 110061-02-6Trans-1,3-Dichlo	50. HUJ;
•	
75-25-2Bromoform 108-10-14-Methyl-2-Penta	100. 10 (02)
591-78-62-Hexanone	100. (U , () () () () () () () () () () () () ()
127-18-4Tetrachloroethen	1900. I
79-34-51,1,2,2-Tetrachl	oroethane 50. U
108-88-3Toluene	50. IF UJ!
108-90-7Chlorobenzene	
100-41-4Ethylbenzene	50. WUJI
100-42-5Styrene	50. IT US
: 1330-20-7Xylene(total)	50. IH UJI

EPA SAMPLE NO.

FBUC18

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3640.8

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3106

Level: (low/med) LOW Date Received: 5/17/91

% Moisture: not dec.100. - Date Analyzed: 5/24/91

Column: (pack/cap) PACK Dilution Factor: 1.00

EPA SAMPLE NO. FDUC18

Lab Name: PACE

Contract:

:\_00034\_\_\_\_

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3643.2

Sample wt/vol: 0.5 5. (g/mL) ML

Lab File ID: G3123

CAE 7/1/91

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO. COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Q
: 74-87-3Chloromethane _ : 74-83-9Bromomethane	100. (U )
1 75-01-4Vinyl Chloride_	100.  U
75-00-3Chloroethane	100.  U
75-09-2Methylene Chlor	1de 50.  U
67-64-1Acetone	100.  U   e   50.  U
75-15-0Carbon Disulfid	e 50. 1U 1
75-35-41,1-Dichloroeth	
75-34-31,1-Dichloroeth	
540-59-01,2-Dichloroeth 57-66-3Chloroform	
107-06-21,2-Dichloroeth	<u> </u>
78-93-32-Butanone 71-55-61,1,1-Trichloro	
56-23-5Carbon Tetrachle	
108-05-4Vinyl Acetate _	~ ` ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
75-27-4Bromodichlorome	thane 50. IU
78-87-51,2-Dichloropro	gage 50. IU
110061-01-5cis-1,3-Dichlore	opropene 50. IU
79-01-6Trichloroethene	
124-48-1Dibromochlorome	
79-00-51,1,2-Trichloro	
71-43-2Benzene	50. IX W
110061-02-6Trans-1,3-Dichle	
75-25-2Bromoform	
108-10-14-Methyl-2-Penta	anone 100. IU COY 1/2/4
591-78-62-Hexanone	100.  U
: 127-18-4Tetrachloroether	ne   1700.
79-34-51,1,2,2-Tetrach	loroethane   50.  U
; 108-88-3Toluene	50. W UJ!
108-90-7Chlorobenzene	50. IV US I
100-41-4Ethylbenzene	
1 100-42-5Styrene	50. IL UI!
1 1330-20-7Xylene(total)	
1	

EPA SAMPLE NO.

| S 8 1S

Lab Name: PACE Contract:

00040

Matrix: (soil/water) WATER Lab Sample ID: 3635.1

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3151

Level: (low/med) LOW Date Received: 5/17/91

% Moisture: not dec.100. Date Analyzed: 5/27/91

Column: (pack/cap) PACK Dilution Factor: 1.00

		CONCENTRATION	UNITS:		
CAS NO.	COMPOUND	(ug/L or ug/Kg	) UG/L	Q	
1		1		;	1
1 74-87-3	Chloromethane	!	10.	; U	:
1 74-83-9	Bromomethane	;	10.	:U	1
1 75-01-4	Vinyl Chloride		10.	; U	ł
1 75-00-3	Chloroethane	;	10.	:U	1
+ 75-09-2	Methvlene Chlori	.de ¦	5.	lu _	1
67-64-1	Acetone		10 %	120	Cae 7/1/41
1 75-15-0	Carbon Disulfide		5.	١U	+/1/4/
1 75-35-4	1,1-Dichloroethe	ne!	5.	١U	1
1 75-34-3	1,1-Dichloroetha	ne;	5.	!U	1
: 540-59-0	1,2-Dichloroethe	ne (total)	, 5 <b>.</b>	!U	1
1 67-66-3	Chloroform	!	€	:	<b>:</b>
107-06-2	1,2-Dichloroetha	.ne!	5.	!U _	1 1
78- <del>9</del> 3-3	2-Butanone	!	10	-H	6 1361
1 71-55-6	1,1,1-Trichlorge	thane	5.	:U `e(	E 71791
1 56-23-5	Carbon Tetrachlo	ride	5.	١U	<b>;</b>
108-05-4	Vinyl Acetate	:	10.	١U	;
1 75-27-4	Bromodichloromet	hane	5.	:U	<b>!</b>
1 78-87-5	1,2-Dichloroprop	ane	5.	:ប	}
110061-01-5	cis-1,3-Dichloro	propene	5.	١U	}
1 79-01-6	Trichloroethene		5.	וט	}
: 124-48-1	Dibromochloromet	hane	5.	; U	
	1,1,2-Trichloroe		5.	וט :	}
1 71-43-2			5.	HU UJ	
110061-02-6	Trans-1,3-Dichlo		5.	ĺU	
1 75-25-2	Bromoform		5.	:U :	
108-10-1	4-Methyl-2-Penta	none :	10.	14 ,051	3/2/91
591-78-6	2-Hexanone		10.	ו ט	11
127-18-4	Tetrachloroethen	e :	56.	: :	
79-34-5	1,1,2,2-Tetrachlo	proethane :	5.	: U:	
108-88-3			5.	IN UJ:	
108-90-7	Chlorobenzene		5.	IN UJ!	
100-41-4	Ethylbenzene	!	5.	IV UJ	
100-42-5	Styrene		5.	WuJ!	
1330-20-7	Xylene(total)		5.		
	, ==::=::====		_•		
				- ' '	

EPA SAMPLE NO. S 8 2

Lab Name: PACE

Contract:

1\_\_00048

Matrix: (soil/water) WATER

Lab Sample ID: 3634.3

Sample wt/vol:

25. (g/mL) ML CAE 7/1/91

Lab File ID: G3118

CONCENTRATION UNITS:

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CAS NO.	COMPOUND	(ug/L or ug/Kg)	NG/L	۵	
;		;	~		;
1 74-87-3	Chloromethane _		25.	រប	;
; 74-83-9- <b></b>	Bromomethane		25.	មេ	1
1 75-01-4	Vinyl Chloride_		25.	: U	į.
: 75-00-3	Chloroethane	<b>†</b>	25.	۱U	1
1 75-09-2	Methylene Chlor	ide :	12.	١U	}
67-64-1	Acetone	; <b>;</b>	25.	۱U	:
1 /5-15-0~~~	Carbon Disultid	P	12.	١U	;
1 75-35-4	1,1-Dichloroeth	ene	12.	:ប	1
1 75-34-3	1,1-Dichloroeth	ane!	12.	١U	:
1 540-59-0	1,2-Dichloroeth	ene (total)!	12.	١U	1
1 67-66-3	Chloroform	;	12.	ŀU	1
1 107-06-2	1,2-Dichloroetha	anel	12.	:υ _	inat
1 78-93-3	2-Butanone	!	<del>-25</del>	<del>~;∪-</del> R	10k/h
1 71-55-6	1,1,1-Trichloro	ethane	12.	:U	1 11
1 56-23-5	Carbon Tetrachlo	oride	12.	ŧu	!
108-05-4	Vinyl Acetate _		25.	:U	;
; 75-27-4	Bromodichlorome	thane !	12.	; ប	;
1 78-87-5	1,2-Dichloroprop	pane!	12.	١U	!
110061-01-5	cis-1,3-Dichlard	propene!	12.	١U	!
1 79-01-6	Trichloroethene	1	25.	:	1
124-48-1	Dibromochloromet	thane	12.	١U	1
1 79-00-5	1,1,2-Trichloroe	thane	12.	ŧ٥	:
			12.	IN UJ	:
110061-02-6	Benzene Trans-1,3-Dichlo	ropropene!	12.	່ານ	;
1 75-25-2	_		12.	10 008	y 141
108-10-1	4-Methyl-2-Penta	none	25.	∵U <sup>ev</sup> ⁄	में भेवा
: 591-78-6	2-Hexanone		25.	: U	`{
1 127-18-4	Tetrachloroether	ne	240.	ŀ	1
	1,1,2,2-Tetrachl		12.	۱u	;
108-88-3	Toluene		12.	: M W	1
108-90-7	Chlorobenzene		12.	IN UJ	1
100-41-4	Ethylbenzene		12.	MUJ	1
1 100-42-5	Styrene		12.	IN MI	:
1330-20-7	Xylene(total)		12.	IN UJ	
1				_ (	:

EPA SAMPLE NO.

Lab Name: PACE Contract:

: твв <sup>1</sup>----<del>0-0-0-5-5</del>----

Matrix: (soil/water) WATER Lab Sample ID: 3637.8

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3119

Level: (low/med) LOW Date Received: 5/17/91

% moisture: not dec.100. Date Analyzed: 5/25/91 -

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRA (ug/L or			Q	
:			1		;	1
1 74-87-3	Chloromethane _		:	10.	١U	1
1 74-83-9	Bromomethane		!	10.	:U	- :
1 75-01-4	Vinyl Chloride		}	10.	١U	;
1 75-00-3	Chloroethane		;	10.	۱U	1
1 75-09-2	Methylene Chlor:	.de	1	5.	: U	:
67-64-1	Acetone		:	10.	١U	;
: 75-15-0	Carbon Disulfide	?		5.	١U	<b>!</b>
1 75-35-4	1,1-Dichloroethe	ne	!	5.	١U	1
1 75-34-3	1,1-Dichloroetha	ine	;	5.	: U	;
: 540-59-0	1,2-Dichloroethe	ne (total)	·:	5.	١U	1
67-66-3	Chloroform		;	5.	١U	1
107-06-2	1,2-Dichloroetha	ne		5.	ιυ _	hat.
: 78-93-3	2-Butanone		!	<del>-10</del>	<del></del>	12/4/41
1 71-55-6	1,1,1-Trichloroe	thane	;	5.	!U	1
56-23-5	Carbon Tetrachlo	ride	!	5.	١U	1
108-05-4	Vinyl Acetate		;	10.	١U	1
1 75-27-4	Bromodichloromet	hane	;	5.	١U	1
1 78-87-5	1,2-Dichloroprop	ane	!	5.	:U	:
110061-01-5	cis-1,3-Dichloro	propene	;	5.	١U	:
1 79-01-6	Trichloroethene			5.	١U	:
124-48-1	Dibromochloromet	hane	;	5.	ΙU	;
1 79-00-5	1.1.2-Trichloroe	thane	:	5.	:U	:
1 71-43-2	Benzene		;	5.	w u	J:
:10061-02-6	Trans-1,3~Dichlo	ropropene	;	5.	:U	1
1 75-25-2	Bromoform		{	5.	¦U	· 0 4 .
108-10-1	4-Methyl-2-Penta	none	;	10.	١U	Curaly 191
: 591-78-6	2-Hexanone		;	10.	١U	1,41,
1 27-18-4	Tetrachloroethen	e	;	5.	!U	:
1 79-34-5	1,1,2,2-Tetrachl	oroethane	(	5.	١U	;
108-88-3	Toluene		:	5.	us us	Γ:
108-90-7	Chlorobenzene		;	5.	HU W	J:
100-41-4	Ethylbenzene		1	5.	HU W	
100-42-5	Styrene		;	5.	H uj	
1330-20-7	Xylene(total)		;	5.	11 uz	7 1
ı					•	

EPA SAMPLE NO. UC18

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3636.0

Sample wt/vol: 0.5 5. (g/mL) ML Lab File ID: G3117

(low/med) LOW (2/1/9)

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/25/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRATION L		Q	_
74-87-3	Chloromethane		100.	Ü	_ ; _ !
1 74-83-9	Bromomethane		100.	IU	i
1 75-01-4	Vinyl Chloride		100.	:U	1
75-00-3	Chloroethane		100.	; U	
75-09-2	Methylene Chlo	r10e	50.	10	i .
6/-64-1	Acetone		100.	10	i .
75-15-0	Carbon Disulfi	de	50.	!U	i
75-35-4	1,1-Dichloroet	nenei	50.	U	į
	1,1-Dichloroet		50.	. –	i
: 540-59-0	1,2-Dichloroet	nene (total);	40.		i
67-66-3	Chloroform 1,2-Dichloroet		50. 50.	. –	i
107-06-2	1,2-Dichloroet	nane	-100.	10	1008 101
; /8-93-3	2-Butanone		50.	<del>\U</del> ₹	100 2 18 1 al
	1,1,1-Trichlor		50.	; U	i
1 100 05 -1	Carbon Tetrach Vinyl Acetate	10,106	100.	: U	1
1 75-03-4	Bromodichlorom	;	50.	; U	1
	1,2-Dichloropr		50.	: U	1
	cis-1,3-Dichlo		50.	:U	1
79-01-5	Trichloroethen	obi obeilei	50.	:U	
1 124-48-1	Dibromochlorom	=	50.	10	į
1 124-40 1	1,1,2-Trichlore	nethane !	50.	:0	•
1 71-43-2	Benzene	se mane	50.	K UJ	. ;
110061-02-6	Trans-1,3-Dich	loropropene	50.	וט	•
	Bromoform		50.	iŭ n	18
108-10-1	4-Methy1-2-Pen	tanone	100.	:0	19/2/91
591-78-6	2-Hexanone		100.	ίŪ	
127-18-4	Tetrachloroethe	ene :	1700.	;	1
	1,1,2,2-Tetraci		50.	; U	1
	Toluene		50.	IN UJ	;
108-90-7	Chlorobenzene		50.	IN UJ	- (
1 100-41-4	Ethylbenzene		50.		
1 100-42-5	Styrene		50.	I'V UJ	
1 1330-20-7	Xylene(total)		50.	IL UJ	
1				_1	1

EPA SAMPLE NO.

1 UC22 Lab Name: PACE Contract:

SDG No.: 

Matrix: (soil/water) WATER Lab Sample ID: 3642.4

Sample wt/vol: 0.1 5. (g/mL) ML Lab File ID: G3124

Level:  $(1 \odot w/\text{med}) LOW$ 

% Moisture: not dec.100. Date Analyzed: 5/25/91

Column: (pack/cap) PACK Dilution Factor: 50.00

CONCENTRATION UNITS:

Date Received: 5/17/91

CAS NO. COMPOUND	(ug/L or ug/kg) UG/L	Ω
		;
: 74-87-3Chloromethane	; 500.	1U 1
† 74-83-9Bromomethane	500.	:U :
75-01-4Vinyl Chloride	; 500.	;U ;
1 75-00-3Chloroethane	; 500.	(U )
: 75-09-2Methylene Chloric	de: 250.	:U :
67-64-1Acetone	500.	;U ;
75-15-0Carbon Disulfide	250.	!U :
75-35-41,1-Dichloroethe	ne: 250.	:U :
1 75-34-31,1-Dichloroetham	ne! 250.	:U :
540-59-01,2-Dichloroether	$ne (total)_{-}; 250.$	1U 1
1 67-66-3Chloroform	250.	IU
<pre>1 67-66-3Chloroform</pre>	ne  250.	:U _ :
78-93-32-Butanone		<del>-IU</del> R INAE.
1 71-55-61,1,1-Trichloroet	thane  250.	10 7 (02)79
1 56-23-5Carbon Tetrachlor	ride 250.	ΙU ;
108-05-4Vinyl Acetate	500.	:U :
1 75-27-4Bromodichlorometh	nane  250.	1U 1
1 78-87-51,2-Dichloropropa	ane 250.	:U :
:10061-01-5cis-1.3-Dichlorop	propene! 250.	:U :
79-01-6Trichloroethene	250.	IU :
1 124-48-1Dibromochlorometh	nane  250.	lU :
1 79-00-51,1,2-Trichloroet	hane  250.	U _
71-43-2Benzene	250.	12 UJ:
10061-02-6Trans-1,3-Dichlor		1U 1,
1 75-25-2Bromoform	250.	10 ,02,1291
l 108-10-14-Methyl-2-Pentar	none   500.	10 013/4
591-78-62-Hexanone	500.	:U :
: 127-18-4Tetrachloroethene	·	1
79-34-51,1,2,2-Tetrachlo	roethane: 250.	ΙU _ Ι
108-88-3Toluene	250.	1 LU UJ 1
: 108-90-7Chlorobenzene	250.	IN UJ!
100-41-4Ethylbenzene	\ 250.	IN UJ!
100-42-5Styrene	250.	IN UJ!
1330-20-7Xylene(total)	250.	IN UJI
·		-

EPA SAMPLE NO.

UC18 MSD

Lab Name: PACE

Contract:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3641.6

Sample wt/vol:

0.5 % (g/mL) ML

Lab File ID: G3153

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/18/9i

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO. COMPOUND	(ug/L or ug/kg) UG/L	C	ו
		<u>-</u>	
74-87-3Chloromethane	: 10	o. ¦u	<b>!</b>
1 74-83-9Bromomethane	10	o. :u	:
75-01-4Vinyl Chloride	: 10	o. :u	:
75-00-3Chloroethane	10	o. !U	:
75-09-2Methylene Chlori	.de	o. :u	1
: 67-64-1Acetone	100	o. :U	;
75-15-0Carbon Disulfide	·; 5·	). :U	:
† 75-35-41,1-Dichloroethe	ne1 370	o. :	<b>;</b>
75-34-31,1-Dichloroetha	ne   50	o. :u	ا
<pre>540-59-01,2-Dichloroethe</pre>	ne (total)! 50	). IU	1
67-66-3Chloroform	: 50	). IU	
107-06-21,2-Dichloroetha	ne: 50	). ¦U	_
1 78-93-32-Butanone	: <del>-10</del> t	<del>).      </del>	R   ca= 1/2/91
71-55-61,1,1-Trichloroe	thane! 50	o. Iu	ا اوال
: 56-23-5Carbon Tetrachlo	ride; 50	). :U	1
108-05-4Vinyl Acetate	100	). IU	1
1 75-27-4Bromodichloromet	hane; 50	). IU	;
1 78-87-51,2-Dichloroprop	ane: 50	). IU	1
110061-01-5cis-1,3-Dichloro	propene _ : 50	). :U	1
1 79-01-6Trichloroethene	: 390	). :	1
: 124-48-1Dibromochloromet	hane! 50	). !U	1
1 79-00-51,1,2-Trichloroe	thane: 50	). IU	;
1 71-43-2Benzene	! 550	. :	<b>:</b>
110061-02-6Trans-1,3-Dichlo	ropropene! · 50	). :U	<b>!</b>
1 75-25-2Bromoform	: 50	). !U	:
: 108-10-14-Methyl-2-Penta		). ¦U	:
: 591-78-62-Hexanone	100	و ۱۵ .	2-1 ,
127-18-4Tetrachloroethen	e; 1600		CAE
: 79-34-51,1,2,2-Tetrachle	oroethane: 50	u: .c	7/1/41
: 108-88-3Toluene	590	). :	}
: 108-90-7Chlorobenzene	\ 490	. :	1
100-41-4Ethylbenzene	¦ 50	). :U	<b>!</b>
100-42-5Styrene	; 50	•	1
1330-20-7Xylene(total)	: 50	. 10	1
<sup>1</sup>		;	;

EPA SAMPLE NO. UC18 MS 

Contract: Lab Name: PACE

Case No.: EPC SAS No.: SDG No.: Lab Code: PACE

Matrix: (soil/water) WATER Lab Sample ID: 3638.6

0.5 %. (g/mL) ML Lab File ID: G3152 Sample wt/vol:

Ca E 7/2/91

(low/med) LOW Level: Date Received: 5/17/91

% Moisture: noi dec.100. Date Analyzed: 5/18/91

Column: (pack/cap) PACK Dilution Factor: 10.00

С	AS NO.	COMPOUND	CONCENTRATION UN (ug/L or ug/Kg)		(	a
;						
}	74-87-3	Chloromethane _		100.	١U	
1	74-83-9	Bromomethane	!	100.	ΙU	
1	75-01-4	Vinyl Chloride_	:	100.	:U	
!	75-00-3	Chloroethane		100.	١U	

75-15-0-----Carbon Disulfide\_\_\_\_\_ 75-35-4----1,1-Dichloroethene\_\_\_\_\_ 75-34-3-----1,1-Dichloroethane\_\_\_\_\_ 540-59-0----1,2-Dichloroethene (total)\_\_; 67-66-3-----Chloroform\_\_\_\_ 107-06-2----1,2-Dichloroethane\_\_\_\_\_: 78-93-3-----2-Butanone\_\_\_\_\_

75-09-2----Methylene Chloride\_\_\_\_\_

67-64-1-----Acetone \_\_\_\_\_

71-55-6----1,1,1-Trichloroethane \_\_\_\_\_ 56-23-5-----Carbon Tetrachloride\_\_\_\_\_: 108-05-4-----Vinyl Acetate \_\_\_\_\_; 75-27-4-----Bromodichloromethane\_\_\_\_\_ 78-87-5----1,2-Dichloropropane \_\_\_\_\_:

|10061-01-5----cis-1,3-Dichloropropene \_\_\_\_| 79-01-6-----Trichloroethene 124-48-1-----Dibromochloromethane\_\_\_\_\_ 79-00-5----1,1,2-Trichloroethane \_\_\_\_\_

| 71-43-2----Benzene \_\_\_\_\_\_ | 10061-02-6-----Trans-1,3-Dichloropropene \_\_ 75-25-2----Bromoform \_\_\_\_\_\_ 108-10-1----4-Methyl-2-Pentanone\_\_\_\_\_

591-78-6----2-Hexanone\_\_\_\_\_ 127-18-4----Tetrachloroethene 79-34-5----1,1,2,2-Tetrachloroethane \_\_\_ | 108-88-3-----Toluene \_\_\_\_\_;

108-90-7-----Chlorobenzene \_\_\_\_\_: 100-41-4-----Ethylbenzene\_\_\_\_\_

100-42-5-----Styrene \_\_\_\_\_ | 1330-20-7-----Xylene(total) \_\_\_\_\_!

100. 50. 10 350. ! 50. !U 50. ;U 50. 10 50. :U +<del>U</del> R <del>100.</del> 50. ١U 50. ١U 100. :U 50. :U 50. !U 50. :U 370. 50. : U 50. ;U 520. : 50. :U 50. !U

50.

10

: U

100. :U 100. l U 1500. 50. !U 540. 480.

50. ΙU 50. l U 50. ΙU

cais 3/1/91



## DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/16/91

Chemical Analyses Performed By
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limits in the Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Cooler temperature for Grace samples was  $10^{\circ}$ C. Cooler temperature for UniFirst samples was  $16^{\circ}$ C. Temperatures outside the range of  $4^{\circ}$ C  $\pm 2^{\circ}$ C may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Eight treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 16, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. V131V10FS was used for the field duplicate, and matrix spike/matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-19	3607	05/16/91
S1-19DUP	3608	05/16/91
S1-19TB	3610	05/16/91
S4-17	3614	05/16/91
V131V7FS	3622	05/16/91
V131V7TB	3624	05/16/91
V154V7FS	3626	05/16/91
V197V7FS	3625	05/16/91



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

Some of the samples missed holding time for non-preserved samples. Detection limits for aromatic compounds in those samples were estimated.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

### A. Initial

Initial calibration criteria were met with the exception of the for 2-butanone (RRF 0.03-criteria 0.1). Detection limits were rejected.

### B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D	
5/23	1:01	2-Butanone	0.026	(0.10)	
		Chloromethane		26.3	(25)
		Vinyl acetate		32.6	(25)
		Bromoform		29.1	(25)
	14:43	2-Butanone	0.015	(0.10)	
				50.8	(25)
		Bromoform		26.0	(25)
		Vinyl acetate		28.0	(25)
5/24	11:56	2-Butanone	0.019	(0.10)	
				34.4	(25)
		Vinyl acetate		31.2	(25)
		cis-1,3-Dichlo	roprope	ene 41.3	(25)



Date	Time	Compound	RF	%D
5/27	11:56	2-Butanone Vinyl acetate Bromoform	0.024	(0.10) 51.3 (25) 31.8 (25)

## () Acceptance criteria

Detection limits for 2-butanone were rejected. All other data were not affected.

#### IV. Blanks

All blanks were acceptable with the exception of VBLK02 which had acetone detected at 5 ppb and V131V7TB which had acetone detected at 2 ppb. Acetone data were qualified as less than the reported values (U).

### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

### VII. Field Duplicates

Tetrachloroethene was detected in the sample at 3900 ppb, the field duplicate at 3800 ppb, in the MS at 3200 ppb, and in the MSD at 3200 ppb (RSD 11.8). The data are acceptable.

### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

Target compounds were properly identified.



# X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were detected.

# XII. System Performance

System performance was acceptable.

## XIII. Overall Assessment of Data for a Case

Detection limits for 2-butanone were rejected.

### " WELTTILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ib Name: PACE

m Code: PACF Case No.: EPC SAS No.:

Contract:

SDG No.:

tarity: /emilywater: WATER

Lab Sample ID: 3607.6

mole wt/sol: 5. (g/mL) ML Lab File ID: G3064

s el: low/med/ LOW

Date Received: 5/17/91

Moisture: not dec.100.

Date Analyzed: 5/23/91

Toloran: Coach, cap/ PAC)

Dilution Factor: 20.00 √

	CONCENTRATION UNITS:
СОМРОНЫЙ	rug/L or ug/kg) BG/L

CAS NO.		na/F or na mu/Fulkalit		Ω	
1 71-57-7			700	1	
7.1_07_0	Chloromethane		200. 200.	١U	i
,	Bromomethane		200.	; U	i
1 75-01-4	Vinvl Chloride	!	200.	;U	i
. 70-70-5 ! 75-00-7	Methvlene Chloride		100.	: U	i
1 37-54-1	Acetone		200.	. U	,
. 0/ 07 I	Carbon Disulfide	''	100.	:0	,
, 5 15 V	1,1-Dichloroethene	'		; U	,
. 25-34-9	1.1-Dichloroethane	;	100.	: U	1
. 540-59-0	1.2-Dichloroethene	(total)	100.	וט	Ċ
57-66-7	Chloroform		100.	. U	•
107-06-7	1.2-Dichloroethane	i	100.	: U	:
: 78-97-3	2-Butanone		200.	NO P	į
71-55-6	1.1.1-Trichloroeth	ane :	100.	10	i
56-23-5	Carbon Tetrachlori	de	100.	ίŪ	
108-05-4	Vinyl Acetate		200.	ΙÜ	
: 75-27 <b>-4</b>	Bromodichlorometha	ne :	100.	١U	;
: 78-87-5	1.2-Dichloropropan	<b>e</b> ;	100.	ŧυ	;
' 1 0061 <del>-</del> 01 -5	cis-1.3-Dichloropr	opene :	100.	:U	1
19-01-6	Trichloroethene	;	100.	ΙU	;
124-48-1	Dibromochlorometha	ne :	100.	: U	1
79-00-5	1.1.2-Trichloroeth	ane	100.	¦U	;
71-43-2	Benzene		100.	١U	;
10061-02-6	Trans-1.3-Dichloro	propene:	100.	ΙU	
75-25-2	Bromoform	!	100.	ιυ	1
108-10-1	4-Methyl-2-Pentano	ne :	200.	:U	;
591-78-6	2-Hexanone	!	200.	:U	:
127-18-4	Tetrachloroethene	[	3900.	}	;
79-34-5	1.1.2.2-Tetrachlord	rethane!	100.	:U	- 1
108-88-3	Toluene		100.	: U	;
108-90-7	Chlorobenzene		100.	;U	;
100-41-4	Ethvlbenzene	<b>_</b> ;	100.	:U	1
100-42-5	Styrene		100.	; U	;
1330-20-7	Xylene(total)	!	100.	; U	;
					- ¦

#### VULATILE URGANICS ANALYSIS DATA SMEET TF'TATIVELY IDENTIFIED COMPOUNDS

\_ab Name: PACE Contract:

SDG No.:00021

atrix: (soil/water) WATER

Lab Sample ID: 3607.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3064

evel: (low/med) LOW

Date Received: 5/17/91

" Moisture: not dec.100.

Date Analyzed: 5/23/91

Jolumn: (paci/dap/ PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

Jumber TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	: : RT !=======	: : EST. CONC.	
1		!	!	
		;	!	
3 4		' !	'	<del>  </del>
5				
ē		!		
7 8				
9				
10				
12.			'	
13;				;
14				
15; 16;				
17;				
18			!	:
7/3				
21				
22		!		
23				
25.				
26				!
27.				
29.		'		;
30.		!		
	1	1	!	;

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### VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. S1-19DUP

ab Mame: PACE Contract:

00026 

Harrik: (Soil/water) WATER Lab Sample ID: 3608.4

Emmple wt/vol: 5. (g/mL) ML Lab File ID: G3067

powel: (low/med) LOW Date Received: 5/17/91

· moisture: not dec.100. Date Analyzed: 5/23/91

Dilution Factor: 20.00 € Honn: 'pack/cap' PACk

#### CONCENTRATION UNITS:

CHE NO.	COMPOUND (ug/L or	ug/kg) UG/L	Q
74-87-3	Chloromethane	200.	(U )
74-83-9	Bromomethane	200.	: U
	Vinvl Chloride	200.	
: 75-00-3	Chloroethane	100.	113
75-09-2	Methylene Chloride	100.	: U
67-64-1	Acetone	1 200.	: U:
/5-15-0	Carbon Disulfide	100.	: U
1 75-35-4	1,1-Dichloroethene	100.	:U :
1 75-34-3	1.1-Dichloroethane	100.	:υ :
) 540-59-0	1.2-Dichloroethene (total)	100.	110
: 67-66-3	Chloroform	100.	:0 :
1 107-06-2	1.2-Dichloroethane	100.	:ប ្ :
: 78-93-3	2-Butanone	بهين ا	WR:
: 71-55-6	1.1.1-Trichloroethane	100.	: 111
' 56-28-5	Carbon Tetrachloride	100.	: U;
: 108-05-4	Vinyl Acetate	: Doo.	:L ;
: 75-27-4	Bromodichloromethane	100.	:U :
: 78-87-5	1,2-Dichloropropane	100.	:υ :
: 1 0061 -01 -5 :	cis-1.3-Dichloropropene	100.	(U )
79-01-6	Trichloroethene	100.	:U :
124-48-1	Dibromochloromethane	_; 100.	; U ;
79-00-5	1.1.2-Trichloroethane	100.	:U :
71-43-2	Benzene		:U :
10061-01-6	Trans-i.3-Dichloropropene	100.	;υ ,
	Bromoform	100.	ii i
108-10-1	4-Methyl-I-Pentanone	200.	: U:
591-78-6	2-Hexanone	[]: 200.	: U:
127-18-4	Tetrachloroethene		;
79-34 <b>-5</b>	1,1,2,2-Tetrachloroethane	100.	(U )
108-88-3	Toluene	100.	:U :
108-90-7	Chlorobenzene	_ 100.	:υ :
t00-41-4	Ethylbenzene	_100.	:U :
100-42-5	Stvrene	_; 100.	: :
1330-20-7	Xylene(total)	[] 100.	:U :
		_ !	1

# TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

S1-19DUP

Matrix: (soil/water) WATER Lab Sample ID: 3608.4

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3067

evel: (low/med) LOW Date Received: 5/17/91

% Moisture: not dec.100. Date Analyzed: 5/23/91

lolumn: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME		EST. CONC.	. Q
		,	,	!:
5		!		
3		!		!:
4		!		!!
5				<u> </u>
6  7				!!
6.				
9				;
10;	•			
11				!!
12				::
13	i			!!
15.				; ;
16				!:
		!		!!
18				!!
19.				
20				' <u>'</u>
22.				
23		;		:
		!		
		!		!
77				
30				'
, <u>, , , , , , , , , , , , , , , , , , </u>			;	
30.			!	!
				!

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### VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S1-19TB

36 Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG NO.4032

(atrik: (soil/water) WATER Lab Sample ID: 3610.6

Fample wt/vol: 5. (g/mL) ML Lab File ID: G3068

Moisture: not dec.100. Date Analyzed: 5/23/91

Tolumn: (pack/cap) PACK Dilution Factor: 1.00

#### CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or	α₫/k₫> UG/L	Ω
!			-;;
1 74-87-3	Chloromethane	1 10.	: U
74-83-9- <del>-</del>	Bromomethane	10.	: U
	Vinvl Chloride	10.	រប :
	Chloroethane	10.	IU :
	Methylene Chloride	5.	:U :
67-64-1	Acetone	10.	; U ;
1 75-15-0	Acetone Carbon Disulfide	5.	:U :
; 75 <i>-</i> 35 <i>-</i> 4 <i></i>	1.1-Dichloroethene	5.	:U :
1 75-34-3	1.1-Dichloroethane	: 5.	: U :
1 540-59-0	1.2-Dichloroethene (total)	5.	:ប :
1 67-66-3	Chloroform	5.	10 :
107-06-2	1.2-Dichloroethane	5.	: :
1 78-93-3	2-Butanone	147.	1421
: /1-55-6	l.l.l-Trichloroethane	5.	:U :
: 56-23 <b>-5-</b> -	Carbon Tetrachloride	: 5.	:U :
108-05-4	Vinyl Acetate	; 10.	:U :
: 75-27-4	Bromodichloromethane	5.	:ប :
1 78-87-5	1,2-Dichloropropane	: 5.	: :
110061-01-5	cis-1.3-Dichloropropene	: 5.	: υ:
1 79-01-6	Trichloroethene	: 5.	:υ :
124-48-1	Dibromochloromethane	5.	: U :
1 79-00-5	1.1.2-Trichloroethane	5.	: U:
1 71-43-2	Benzene	; 5.	:U :
10061-02-6	Trans-1.3-Dichloroprobene	5.	:U ;
. 75-15-1	Bromoform	; 5.	: U :
108-10-1	4-Methvl-2-Pentanone	10.	:U :
: 591-78-6	2-Hexanone	10.	:U :
127-18-4	Tetrachloroethene	: 5.	:U :
1 79-34-5	1,1,2.2-Tetrachloroethane		; U ;
108-88-3	Toluene	: 5.	10 :
108-90-7	Chlorobenzene	5.	:U :
100-41-4	Ethylbenzene	; 5.	:U :
100-42-5	Styrene		!U
1330-20-7	Xylene(total)	; 5.	:U :
	,		11

# TENTATIVELY IDENTIFIED COMPOUNDS

\_at Name: PACE Contract:

S1-19TB

atrix: (Soil/water) WATER Lab Sample ID: 3610.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3068

evel: (low/med) LOW . Date Received: 5/17/91

% Moisture: not dec.100. Date Analyzed: 5/23/91

Lolumn: (pack/cap) PACK Dilution Factor: 1.00

Vumber TICs found: 0 CONCENTRATION UNITS:

CAS NUMBER			: : EST. CONC.	; ;
=======================================	;======================================	;======	;=========	;=====;
1		<b>!</b>	1	: :
2.		!	'	!
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14;		;		!!
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20.	i			<b>:</b> :
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22.		!		;
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OE		:		
26		!		
77	 			;
`·································	i	!		!
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		!		:

FORM I VOA-TIC

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## VOL/TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

.ab Mame: PACE

Contract:

on Code: PACE Case No.: EPC SAS No.: s**മ**6 ൾഎ.3 7

tarrik: (soil/water) WATER

Lab Sample ID: 3614.9

Tample wt vol: 5. (g/mL) MI Lab File ID: 63084

// (low/med) LOW

Date Received: 5/17/91

Moisture: not dec.100.

\_\_ \_\_ \_\_ Date Analyzed: 5/13/91

'Alumn: 'pack/cap' PACK

Dilution Factor: 10.00v

COMPOU				UNITS:	a	
: 74-67-3Chloro	math 200		ļ	100.	; ; U	:
74-83-9Bromom	methane		;	100.	; U	,
= 75-01-4Viny1	Chlarida			100.	10	'
75-00-3Chloro	othane			100.	10	•
75-09-2Methy1	evnane		;	50.	:0	•
67-64-1Aceton	B		·· '	100.	10	
75-15-0Carbon	Disulfide		' !	50.	. U	
75-35-41.1-Di	chloroethene		;	50.	:U	;
75-34-31.1-Di	chloroethane		;	50.	: U	;
540-59-01.2-Di	chloroethene (t	otal		50.	ίŪ	
: 67-66-3Chloro	form			50.	ίŪ	;
107-06-21.2-Di	chloroethane		;	50.	¦U	;
/ 78-93-32-Buta	none		{	100.	WR	. :
1 71-55-61.1.1-	Trichloroethane		:	50.	¦υ ˙	:
56-23-5Carbon	Tetrachloride		}	50.	:U	1
108-05-4Vinv1 /	Acetate		;	100.	l U	;
: 75-27-4Bromod:	chloromethane		;	50.	١U	;
78-87-51,2-D1	thloropropane [		<u> </u>	50.	:U	;
110061-01-5cis-1.3	8-Dichloroprope	ne	;	50.	:U	;
79-01-6Trichle	proethene		;	50.	ιυ	}
124-48-1Dibromo	ochloromethane			50.	¦ U	:
79-00-51,1,2-7	richloroethane		{	50.	(U	į
71-43-2Benzene	<u> </u>		;	50.	١U	÷
U-0061-02-6Trans-1	.3-Dichloropro	sene	;	50.	١U	;
: 75-25-2Bromofo	rm			50.	ŧυ	;
108-10-14-Meth	1-1-Pentanone			100.	ιυ	1
: 591-78-62-Hexar	one		:	100.	¦U	;
127-18-4Tetrach	lordethene		;	2000.	!	:
79-34-51.1,2,2	:-Tetrachloroet	iane	;	50.	: U	;
108-88-3Toluene			!	50.	: U	1
: 108-90-7Chlorot	enzene		;	50.	; U	;
100-41-4Ethylbs	nzene		: 1	50.	:ប	\$ 1
100-42-5Styrene	·		;	50.	; U	;
1330-20-7Xylene	total)		;	50.	; U	ł
ال الله الله الله الله الله الله الله ا						_ ;

#### VOLATILE ORGANICS ANALYSIS DATA SHEET T TATIVELY IDENTIFIED COMPOUNDS

: S4-17

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

4atrix: (SOil/water) WATER

00038 Lab Sample ID: 3614.9

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3084

evel: (low/med) LOW

Date Received: 5/17/91

" Moisture: not dec.100.

Date Analyzed: 5/23/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Number TICs found: 0

COMPOUND NAME RT : EST. CONC. : Q : CAS NUMBER 1.\_\_\_\_\_ 3. \_\_\_\_\_ 7.\_\_\_\_ 8. \_\_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ 9.\_\_\_\_\_|\_\_\_|\_\_\_| 13.\_\_\_\_\_ 15.\_\_\_\_\_;\_\_\_; 17.\_\_\_\_\_ 18.\_\_\_\_; 19.\_\_\_\_\_ \_\_\_\_\_ .4.\_\_\_\_\_| -5.\_\_\_\_\_| 

FORM I VOA-TIC

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0 0 0 137 V7FS

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3622.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3131

Level: (low/med) LOW Date Received: 5/17/91

% Moisture: not dec.100. Date Analyzed: 5/27/91

Column: (pack/cap) PACK Dilution Factor: 10.00

CAS NO.	COMPOUND			ATION U	– . – -	Q
74-87-3 74-83-9 75-01-4 75-09-2 67-64-1 75-35-4 75-35-4 75-36-3 107-06-2 78-93-3 108-05-4 75-27-4 78-87-5 10061-01-5 79-01-6 79-01-6 79-00-5 124-48-1 79-00-5 108-10-1 591-78-6 127-18-4 79-34-5	ChloromethaneBromomethaneVinyl ChlorideChloroethaneChloroethaneCarbon Disulfid1,1-Dichloroeth1,2-Dichloroeth1,2-Dichloroeth1,2-Dichloroeth1,1-TrichloroethCarbon TetrachloroethCarbon TetrachloroethCarbon TetrachloroethCarbon TetrachloroethTrichloroethlorome1,2-Dichloroprocis-1,3-DichloroethTrichloroetheneDibromochlorome1,1,2-TrichloroeBenzeneTrans-1,3-DichloroeBromoform4-Methyl-2-Penta2-HexanoneTetrachloroetheneTetrachloroetheneTetrachloroetheneTetrachloroethene	eneene (totaneethaneethaneethaneethaneethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_et	al)	ug/Kg)	100. 100. 100. 360. 100. 50. 78. 50. 50. 50. 50. 50. 50. 50. 50. 50. 50	
108-90-7 100-41-4 100-42-5	TolueneChlorobenzeneEthylbenzeneStyreneXylene(total)			 	50. 50. 50. 50.	

#### VOLATILE ORGANICS ANALYSIS DATA SHEET T TATIVELY IDENTIFIED COMPOUNDS

ab Name: PACE

Contract:

V131V7FS 0-0-0-1-8-----

EFA SALIFLE NU.

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

latrix: (soil/water) WATER

Lab Sample ID: 3622.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3131

\_evel: (low/med) LOW

Date Received: 5/17/91

Moisture: not dec.100.

Number TICs found:

Date Analyzed: 5/27/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

COMPOUND NAME CAS NUMBER 3.\_\_\_\_\_| 4. ! \_\_\_\_\_ 8.\_\_\_\_ 15. 21.\_\_\_\_\_ 27.\_\_\_\_ 28. 

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## VOL ILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3624.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3099

Level: (low/med) LOW Date Received: 5/17/91

% Moisture: not dec. 100. Date Analyzod+ 5/24/94 --

Column: (pack/cap) PACK Dilution Factor: 1.00

		CONCENTRATI	ON UNITS:	
CAS NO.	COMPOUND	(ug/L or ug	/kg) UG/L	Q
				- 1
	Chloromethane			: U
1 74-83-9	Bromomethane		10.	: U:
1 75-01-4	Vinyl Chloride		10.	: 0
1 75-00-3	Chloroethane		10.	: U:
1 75-09-2	Methylene Chlori	de	5.	:U :
1 67-64-1	Acetone		1 2.	J
1 75-15-0	Carbon Disulfide		; 5.	: U:
1 75-35-4	1,1-Dichloroethe	ne	5.	: U:
1 75-34-3	1,1-Dichloroetha	ne	5.	:U :
1 540-59-0	1,2-Dichloroethe	ne (total)	! 5.	:U :
: 67-66-3	Chloroform		: 5.	:U :
107-06-2	1,2-Dichloroetham	ne	5.	:U :
1 78-93-3	2-Butanone	_	10.	WR!
1 71-55-6	1,1,1-Trichloroe	thane	5.	וט ו
1 56-23-5	Carbon Tetrachlor	ride :	5.	:U :
1 108-05-4	Vinyl Acetate		10.	10 1
1 75-27-4	Bromodichlorometh	ane :	5.	:U ;
1 78-87-5	1,2-Dichloropropa	ane :	5.	: U:
:10061-01-5	cis-1,3-Dichlorop	ropene :	5.	:U :
1 79-01-6	Trichloroethene	;	5.	:U :
124-48-1	Dibromochlorometh	ane :	5.	:U :
1 79-00-5	1,1,2-Trichloroet	hane :	5.	:U :
71-43-2			5.	:ሀፓ :
10061-02-6	Trans-1,3-Dichlor	opropene	5.	IU :
75-25-2			5.	IU i
108-10-1	4-Methyl-2-Pentar	one		
591-78-6	2-Hexanone	· ·	10.	iu i
127-18-4	Tetrachloroethene		5.	10 :
	1,1,2,2-Tetrachlo		5 <b>.</b>	10 :
108-88-3	Toluene	TOE VII AIRE !	5.	105
108-90-7	Chlorobenzene	;	5.	101 :
100-30-7	Ethylbenzene		5.	Ü
100-41-4	Styrene	;	5.	Ü
1220-20-7	Xylene(total)	;	5.	
1330-20-/	xyreneccocary	;	J.	ا <u>سندن</u> !!
		'		· ' <del></del> '

#### VOLATILE ORGANICS ANALYSIS DATA SHEET 7 TATIVELY IDENTIFIED COMPOUNDS

'ab Name: PACE Contract: V131V7TB

00027

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

latrix: (soil/water) WATER

Lab Sample ID: 3624.6

Sample wt/vol:

5. (g/mL) ML

Lab File ID: G3099

\_evel: (low/med) LOW

Date Received: 5/17/91

Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Number TICs found:

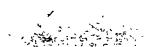
Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

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CAS NUMBER	COMPOUND NAME	; RT	: EST. CONC.	: : Q
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### VOL TILE ORGANICS ANALYSIS DATA SHEET

:\_\_\_.0.0.0.3.2\_\_\_\_:

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3626.2

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3105

Level: (low/med) LOW Date Received: 5/17/91

% Moisture: not dec.100. - Date Analyzed: 5/24/91 \_\_\_

Column: (pack/cap) PACK Dilution Factor: 5.00

Lab Name: PACE

# VOLATILE ORGANICS ANALYSIS DATA SHEET

T TATIVELY IDENTIFIED COMPOUNDS V154V7FS Contract:

SDG No.: 

Matrix: (soil/water) WATER Lab Sample ID: 3626.2

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3105

Level: (low/med) LOW Date Received: 5/17/91

% Moisture: not dec.100. Date Analyzed: 5/24/91

Dilution Factor: Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

	 !	!	1	· · · · · · · ·
CAS NUMBER	COMPOUND NAME	: RT !======	EST. CONC.	; Q ;
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FORM I VOA-TIC

1/87 Rev.

EPA SAMPLE NO.

V197Y7FS 00039

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3625.4

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3104

Level: (low/med) LOW Date Received: 5/17/91

% Moisture: not dec.100. Date Analyzed: -5/24/91 .......

\*Column: (pack/cap) PACK Dilution Factor: 10.00

CAS NO.	COMPOUND			ON UNITS: /Kg) UG/L	Q	
74-87-3 74-83-9 75-01-4 75-00-3 75-09-2 67-64-1 75-35-4 75-34-3 67-66-3 107-06-2 78-93-3 108-05-4 75-27-4 78-87-5 10061-01-5 79-01-6 124-48-1 79-00-5 71-43-2 10061-02-6 75-25-2 108-10-1	ChloromethaneBromomethaneVinyl ChlorideChloroethane	cug/L o	1)	100. 100. 100. 100. 100. 50. 100. 50. 50. 1600. 50. 50. 140. 50. 50. 50. 140. 50. 50. 100.		
127-18-4 79-34-5 108-88-3 108-90-7 100-41-4 100-42-5	2-HexanoneTetrachloroether1,1,2,2-TetrachlTolueneChlorobenzeneEthylbenzeneStyreneXylene(total)	oroethane		100. 50. 50. 50. 50. 50. 50.	: U	

#### VOLATILE ORGANICS ANALYSIS DATA SHEET T TATIVELY IDENTIFIED COMPOUNDS

V197V7FS Contract:

Lab Name: PACE

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3625.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3104

Level: (low/med) LOW

Date Received: 5/17/91

% Moisture: not dec.100.

Date Analyzed: 5/24/91

Column: (pack/cap) PACK

Number TICs found:

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

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CAS NUMBER	COMPOUND NAME	• • • •	EST. CONC.	: Q :
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FORM I VOA-TIC

1/87 Rev.



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/16/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

With the exception of the field blanks and trip blank, foaming occurred during sample analyses, especially in Samples S5-14, S6-19, and S6-19DUP.

Detection limits for aromatic compounds were estimated in UniFirst samples.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was  $10^{\circ}\text{C}$ ; cooler temperature for the UniFirst samples was  $16^{\circ}\text{C}$ . Temperatures outside the  $4^{\circ}\text{C}$   $\pm 2^{\circ}\text{C}$  range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.

W. R. GRACE	PACE Project Number:	810517	501
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0036211 05/16/91 05/17/91 <u>V140 V7 FB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MO Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	DIFIED ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

Method Detection Limit Not detected at or above the MDL.

MDL

ND



#### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 16, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-19FB	3609	05/16/91
S5-14	3615	05/16/91
S6-19	3616	05/16/91
S6-19DUP	3617	05/16/91
S6-19TB	3618	05/16/91
V140V7FS	3619	05/16/91
V140V7FB	3621	05/16/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



#### I. Holding Times

Samples from the W.R. Grace treatment plant were preserved with HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

#### A. Initial

Initial calibration criteria were met on 5/23/91.

#### B. Continuing

Continuing calibration criteria were met on 5/24/91 with the exception of the % difference for 1,1,2,2-tetrachloroethane (actual 26.83; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/25/91.

Continuing calibration criteria were met on 5/28/91 with the exception of the % difference for methylene chloride (actual 31.12; criteria 25) and 1,1,2,2-tetrachloroethane (actual 25.37; criteria 25). Data were not affected.

#### IV. Blanks

The trip blank, field blanks, and method blanks were clean.



#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-19. The percent recoveries for 1,1-dichloroethene were below QC criteria in the MS and MSD. No positive results for this compound were detected, so no data were qualified.

#### VII. Field Duplicates

Samples S6-19 and S6-19DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

MDL (ug/L)	Compound
0.48	Vinyl Chloride
0.49	Chloroethane
4.41	Methylene Chloride
0.67	1,1-Dichloroethene
0.54	1,1-Dichloroethane
0.50	trans-1,2-Dichloroethene
0.53	Chloroform
0.49 4.41 0.67 0.54 0.50	Chloroethane Methylene Chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene



Compound	MDL (ug/L)
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Compounds reported in Sample S5-14 were quantified using the relative response factor from the initial calibration rather than the response factor from the continuing calibration. Correct results are listed below.

Compound	<u>Concentration</u>	(ug/L)
1,1-Dichloroethene	1.2	
1,1-Dichloroethane	2.2	
1.1.1-Trichloroethane	27	

The concentration of 1,1,1-trichloroethane in this sample was beyond the calibration range of the instrument. This result met precision and accuracy criteria and was acceptable as reported.

The concentration of methylene chloride in Sample S5-14 was below the PQL-determined MDL for this project. This result was corrected to "ND."

In the sample results column of the Form I for S1-19FB, "DONE" was typed in for each compound. A corrected Form I with "ND" in place of "DONE" is included with this validation report.

All other results and detection limits were acceptable with regard to the supporting data.



#### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

#### XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

Compound concentrations were corrected for Sample S5-14.

Detection limits for aromatic compounds were estimated in all UniFirst samples.

UNIFIRST/ENSR	PACE Project	Number:	810517500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0036092 05/16/91 05/17/91 <u>S1-19 FB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	DONE NO LL 114 41 LD 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 100 PC 10
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	DONE DONE DONE DONE DONE DONE
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L - ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	DONE DONE DONE DONE DONE DONE
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	DONE DONE DONE DONE DONE DONE DONE
Ethyl benzene: Xylene, total	_ ug/L _ ug/L	0.5 0.5	DONE

MDL

Method Detection Limit
Not detected at or above the MDL. ND

UNIFIRST/ENSR	PACE Project	Number:	810517500
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0036157 05/16/91 05/17/91 <u>\$5-14</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ekt 7/9/91 1-31.2 2-52.2 ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND 7/1/91 ND 7/1/91 ND ND .28.4 28 27 ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	DD DD ND ND ND WJ
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	DD MD MD MD MD MD MD MD MD MD MD MD MD M
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

UNIFIRST/ENSR	PACE Project	Number:	810517500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0036165 05/16/91 05/17/91 <u>S6-19</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND WD
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	סא סא סא סא סא סא סא סא
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

Method Detection Limit Not detected at or above the MDL. MDL

ND

UNIFIRST/ENSR	PACE Project	Number:	810517500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0036173 05/16/91 05/17/91 S6-19 Dup
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND 0.7 ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ON CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT OF
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL ND Method Detection Limit Not detected at or above the MDL.

UNIFIRST/ENSR	PACE Project	Number:	810517500
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0036181 05/16/91 05/17/91 S6-19 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	עט טט טט אט אט אט אט אט
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND U.J ND (
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND NO

MDL Method Detection Limit Not detected at or above the MDL.

ND

#### W. R. GRACE

PACE Project Number: 810517501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0036190 05/16/91 05/17/91 <u>V140 V7 FS</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFI Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethane 1,1-Dichloroethane trans-1,2-Dichloroethene	ED ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND NO ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

W. R. GRACE PACE Project Number: 810517501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0036211 05/16/91 05/17/91 V140 V7 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/16/91 - 5/20/91

Chemical Analyses Performed By
Aquatec Inc.

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Samples were submitted for Method 524.2 analyses. Although surrogate recoveries and most internal area counts were acceptable, the data should be used with caution because no field QC samples were submitted, nor were matrix spike/matrix spike duplicate samples requested.

The analyte list for Method 524.2 analyses was reduced for the Wells G&H project. However, because of its unfamiliarity with the project, Aquatec analyzed for the full analyte list. For Method 524.2, compounds not being considered in this project were "lined out" on the Form Is submitted with this validation report.

Cooler temperatures were not recorded by the laboratory upon receipt of samples. Cooler temperatures outside the  $4^{\circ}\text{C}$   $\pm 2^{\circ}\text{C}$  range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Eleven samples were collected and submitted to Aquatec Inc. on May 16, May 17, May 18, and May 20, 1991. The laboratory was requested to perform volatile organics (VOA) pursuant to Method 524.2.

The samples included for in this Sample Delivery Group (SDG) for CLP analyses are:

16D2 134928 05/16/91 16D3 134929 05/16/91 17C1 134931 05/17/91 17C2 134932 05/17/91	Client ID	<u>Lab ID</u>	Date of Collection
17C2 134932 05/17/91	16D3	134929	05/16/91
	17C2 17C3	134932 134933	05/17/91 05/17/91
17D1 134934 05/17/91 17D2 134935 05/17/91 17D3 134936 05/17/91	17D2	134935	05/17/91
18C1 134938 05/18/91 18D1 134939 05/18/91 20C1 134940 05/20/91	18C1 18D1	134938 134939	05/18/91 05/18/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

According to the chain of custody forms, Samples 18C1, 18D1, and 20C1 were preserved with HCL at the time of collection. All other samples were unpreserved. Samples 18D1 and 20C1 were analyzed within the 14-day holding time for preserved volatile aqueous samples. Sample 18C1 was analyzed three days outside the 14-day holding time; all positive results and detection limits for that sample were qualified as estimated.

Samples 16D2, 16D3, 17C1, 17C2, 17D1, 17D2, and 17D3 were analyzed within the 7-day holding time for unpreserved volatile aqueous samples. Sample 17C3 was analyzed outside the 7-day holding time for unpreserved samples but within the 14-day holding time for volatile aqueous samples. Detection limits for aromatic compounds were qualified as estimated in Sample 17C3.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

#### A. Initial

Initial calibration criteria were met on 5/22/91, 5/23/91, and 6/3/91 (Instrument 5100G).

### B. Continuing

Continuing calibration criteria were met on 5/21/91, 5/30/91, and 6/3/91 (Instrument 5100G).

### IV. Blanks

Methylene chloride was reported in Method Blanks VBLKS5, VBLKV3, and VBLKY3. Methylene chloride, trichloroethene, and toluene were reported in Method Blank VBLKR9. Methylene chloride results were qualified as less than the reported values in the associated field samples.

No field blanks or trip blanks were submitted for Method 524.2 analyses.



# V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

# VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate analyses were not requested for this SDG.

### VII. Field Duplicates

No field duplicates were submitted with this SDG.

#### VIII. Internal Standards Performance

Internal standard area counts were below criteria in Sample 18D1 for fluorobenzene, 1,4-dichlorobenzene-d4, and chlorobenzene-d5. Detection limits and positive results for 18D1 were qualified as estimated.

All other internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable based on the supporting data.

## XI. Tentatively Identified Compounds

TICs were not provided for these analyses.

### XII. System Performance

System performance was acceptable.



## XIII. Overall Assessment of Data for a Case

No field blanks, trip blanks, or field duplicates were submitted for Method 524.2 analyses, nor were MS/MSD samples requested. Although surrogate recoveries and most internal area counts were acceptable, these data should be used with caution because of the lack of quality control samples.

Lab Name: <u>Aquatec</u>	. Inc. Contract:	91000 16D2	
Lab Code: <u>AQUAI</u>	Case No.: <u>26431</u> SAS No.	o.: SDG No.:16D2	_
Matrix: (soil/water)	Water	Lab Sample ID:134928	
Sample wt/vol:		Lab File ID: G134928V	
Level: (low/med)	LOW	Date Received:05/21/91	
		Date Analyzed: 05/22/91	_
Column: (pack/cap)	CAP	Dilution Factor:1.0	
		ACENTRATION INTRO-	

CAS NO. COMPOUND (ug/L or ug/Kg) <u>ug/L</u> Q

CAS NO.	COMPOUND (ug/L or ug/kg	) <u>ud/L</u>	Q
75-71-8	Dichlopedifluoremethane		
74-87-3	Chloromethane	0.5	
75-01-4	Vinyl Chloride	0.5	<u>U</u>
74-83-9	Bromomothano	0.5	
75-00-3	Chloroethane	0.5	<u>U</u>
	Trichlorofluoromothano	0_5	
	1,1-Dichloroethene	0.5	<u> U                                   </u>
	Garbon Diculfido		
	<del>loctone</del>		
	Methylene Chloride	0.5	<u> </u>
156-60-5	trans-1,2-Dichloroethene	0.5	<u>U</u>
75-34-3	1,1-Dichloroethane	0.5	<u> </u>
590-20-7	<del>-3/3-Dichleropropano</del>	0.5	
156-59-4	cis-1,2-Dichloroethene	0.5	<u> </u>
74-97-5	Bremochleremothene	-0.5	
67-66-3	Chloroform	0.5	<u> </u>
71-55-6	1,1,1-Trichloroethane	0.5	
56-23-5	Carbon Tetrachloride	0.5	<u> </u>
78-93-3	<del>2 Dutanono</del>		
563-58-6	1-1-Dichlerepropene	0.5	
71-43-2	Benzene	0.5	
107-06-2	Benzene	0.5	Ü
79-01-6	Trichloroothene	0.5	Ü
78-87-5	1,2-Dichloropropane	0.5	U
74-95-3	Bibromomethane	0.5	<del></del>
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	<u>u</u>
108-88-3	Toluene	0.5	U
	trans-1,3-Dichloropropene	0.5	U
	4 Methyl 2 Pentanene	5	<u> </u>
	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U
	<del> </del>		

Lab Name: Aquatec	, Inc. Contra	ct:91000	16D2
Lab Code: <u>AQUAI</u>	Case No.: <u>26431</u>	SAS No.: SDG	No.:16D2
Matrix: (soil/water)	Water	Lab Sample ID:	134928
Sample wt/vol:		Lab File ID:	G134928V
Level: (low/med)	LOW	Date Received:	05/21/91
•		Date Analyzed:	05/22/91
-Column: (pack/cap)	CAP	Dilution Factor	:1.0
and No	COMPOSITION	CONCENTRATION UNITS	-

	COMPOUND (ug/L or ug/Kg	J) <u>uq/L</u>	Q
142-28-9	<del>ty3 Dichlereprepane</del>	0.5	
124-48-1	Dibromochloromethane	0.5	ט
	<del>ly3 Dibromoethane</del>	0.5	
591-78-6	<del></del>		Ţ,
108-90-7	Chlorobenzene	0.5	ับ
	<del>l,l,l,3 Wetrachleroethane</del>	0.5	- 17
	Ethylbenzene	0.5	U
	Xylene (total)	0.5	ט
	Ctypeno	0.5	
75-25-2	Bromoform	0.5	U
98-82-8	<del>Isopropylbonsono</del>	0.5	<u> </u>
108-86-1	Dromobensene	0.5	
96-18-4		0.5-	
79-34-5	1.1.2.2-Tetrachloroethane	0.5	U
103-65-1	a Drepylbonsono	0.5	
95-49-8	2-Chlorotoluene	0.5	U
106-43-4	4-Chlorotoluene	0,0	Ü
108-67-8	1,3,5-Trimethylbenzene	0.5	U
98-06-6	tert-Butylbenzene	0.5	U
95-63-6	1,2,4-Trimethylbenzene	0.5	U
135-98-8	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	Ü
106-46-7	==1.4-Dichlorobenzene	0.5	<del>-</del>
99-87-6	4-Isopropyltoluene	0.5	U
95-50-1	1,2-Dichlorobenzepe	0.5	<u>U</u>
104-51-8	n-Butylbenzene	0.5	U
96-12-8	1,2-Dibromo-s-chloropropane	0.5	U
	1,2,4-Trichlorobenzene	0.5	U
91-20-3	Naphthalene	0.5	U
37-68-3	Herachlorobutadiene	0.5	U
37-61-6		0.5	

Lab Name: <u>Aquated</u>	. Inc. Contrac	16D3 t: 91000	_
Lab Code: <u>AQUAI</u>	Case No.: <u>26431</u>	SAS No.: SDG No.:16D2	
_ Matrix: (soil/water)	Water	Lab Sample ID: 134929	
Sample wt/vol:		Lab File ID: G134929V	
Level: (low/med)	LOW	Date Received:05/21/91	
		Date Analyzed: 05/22/91	
Column: (pack/cap)	CAP	Dilution Factor:1.0	
-	<del></del>	CONCENTRATION UNITS:	

CAS NO.	COMPOUND (ug/L or ug/Kg		Q
	<del>Dichleredifluerenethane</del>	0.5	
74-87-3	Chloromothano	Q-5	
	Vinyl Chloride	0.5	<u> </u>
	Brememethane	0.5	<u> </u>
	Chloroethane	0.5	U
75-69-4	Trichlerofluoremethane		
	1,1-Dichloroethene	0.5	<u> </u>
	Carbon Diculfido	0-5-	<u> </u>
67-64-1	<del>-hoctone</del>	11	- B -
75-09-2	Methylene Chloride	0.5	<u>U</u> .
156-60-5	trans-1,2-Dichloroethene	0.5	<u> </u>
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	<del>2,2 Dichloropropano</del>	0.5	II
156-59-4	cis-1,2-Dichloroethene	0.5	ט
74-97-5	Bromochloromethane	0.5	1
	Chloroform	0.5	U
	1,1,1-Trichloroethane	0.5	U
	Carbon Tetrachloride	0.5	<u>"</u>
78-93-3	2 Butanone		- <del>U</del>
563-58-6	1,1 Dichloropropenc	0.5	Ü•
71-43-2	Benzene	0.5	U
107-06-2	1,2-Dichloroethane	0.5	<u> </u>
79-01-6	Trichloroethene		
78-87-5	1,2-Dichloropropane	0.5	U
	Dibrowomethane	0.5	17
75-27-4	Bromodichloromethane		U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	<b>-</b> ·	0.5	<del>-U</del>
100-00-3	Toluene trans-1,3-Dichloropropene	0.5	<u>u</u>
10001-02-0			
	1,1,2-Trichloroethane	0.5	U
	Tetrachloroethene	0.5	U
12/-10-4-3	- Techacillor decilenc		

			16D3	
Lab Name:Aquate	ec. Inc. Contr	ract: 91000		
Lab Code: AQUAI	Case No.: 26431	SAS No.:	SDG No.:	16D2
Matrix: (soil/water	) <u>Water</u>	Lab Sample	ID: <u>13492</u>	9
Sample wt/vol:		Lab File 1	D: <u>G13492</u>	9V
Level: (low/med)	LOW	Date Recei	ved: <u>05/21</u>	/91
		Date Analy	zed: <u>05/22</u>	/91
Column: (pack/cap)	CAP	Dilution F	actor:	1.0
CAS NO.	COMPOUND	CONCENTRATION (ug/L or ug/Kg)		Q
142-28-9	1,3-Dichloropr	opano ,	0.5	17
124-48-1	Dibromochlorom	ethane	0.5	U
106-93-4	<del>1,3-Dibromooth</del>	2 <del>710</del>	0.5	
591-78-6	<del>4 йскапопо</del>		<del></del>	
108-90-7	Chlorobenzene_		0.5	U
630-20-6	<del>1,1,1,2 Tobras</del> i	nloreothano	0.5	
100-41-4	Ethylbenzene		0.5	U
1330-20-7	Xylene (total)		0.5	U
100-42-5	<del>Ctyrono</del>		0.5	<u> </u>
75-25-2	Bromoform		0.5	U
98-82-8	Tsopropylbenzer	1C	0.5	U
108-86-1	<del>Bromobensene_</del>		0.5	
96-18-4	<del>4,3,3-Trichler</del>	propano	0.5	<del></del>
79-34-5	1,1,2,2-Tetracl	loroethane	0.5	<u>U</u>
103-65-1	<del>-n-Dropylbonson</del> e			
95-49-8	2-Chlorotoluene	2	0.5	U_
	4-Chlorotoluene		0.5	<u>U</u> ]
108-67-8	1,3,5-Trimethyl	benzene	0.5	<u>U</u>
	tert-Butylbenze		0.5	<u> </u>
95-63-6	1,2,4-Trimethyl	benzene	0.5	<u> </u>
	sec-Butylbenzer		0.5	<u> </u>
	1,3-Dichlorober		0.5	<u>u</u>
106-46-7	1,4-Dichloroben	zene	0.5	TT
	4-Isopropyltolu		0.5	U
	1,2-Dichloroben		0.5	U
104-51-8	n-Butylbenzene_		0.5	U
	1,2-Dibromo-2-c	hloropropane	0.5	U
	1,2,4-Trichloro		0.5_	U
91-20-3	Naphtbalene		0.5	U
87-68-3	Herachlorobutad		0.5	U
87-61-6	<del>1,2,3 Trichloro</del>	bensene	0.5	· · ·

0.5

0.5

0.5

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U

Lab Name: Aquatec, Inc.	17C1 Contract: 91000	_
Lab Code: <u>AOUAI</u> Case No.:	26431 SAS No.: SDG No.:16D	)2
Matrix: (soil/water) Water	Lab Sample ID:134931	
Sample wt/vol:25(g/ml	L) <u>mL</u> Lab File ID: <u>G134931I3V</u>	7
Level: (low/med) LOW_	Date Received:05/21/91_	-
	Date Analyzed: 05/23/91	
Column: (pack/cap) <u>CAP</u>	Dilution Factor: 1.0	
CAS NO. COMPOUNI	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u>	Q
75-71-8 <del>-Dishlere</del>	ifluoromothano 0.5	Ü
74-87-3 <del>-Chleremet</del>		متا
75-01-4Vinyl Chl	oride	U
74-83-9 <del>Dromometh</del>	ene	<u></u>
75-00-3Chloroeth	ane	
75-69-4 <del>Tricklers</del>	fluoremethaneO.5	<b></b>
75-35-41,1-Dichl		<u>U</u>
75-15-0		<u>-</u>
67-64-1 <del>-hockene_</del>		
75-09-2Methylene	Chloride	BRIT!
156-60-5trans-1,2	-Dichloroethene0.5	<u>U</u>
75-34-31,1-Dichl	oroethane0.5	<u>u</u> ,
590-20-7 <del>872-Dichl</del>		<u></u>
156-59-4cis-1,2-D	ichloroethene 0.3 J	<u>-</u>
74-97-5	renethane0.5	
67-66-3Chlorofor	m	
71-55-61,1,1-Tri	chloroethane 0.4 J	<u>,</u>
56-23-5Carbon Te		
78-93-3 <del>2 Dutanon</del>		<del>]</del>
563-58-6 <del>1,1 Dichl</del>	Propropens	
71-43-2Benzene_	0.5	
107-06-21,2-Dichl	proethane 0.5 U	<del></del>
79-01-6Trichloro	ethene 0.7	<del>,</del>
78-87-51,2-Dichle 74-95-3	propropane 0.5 U	
75-27-4Bromodich	hane 0.5 U	
10061-01-5cis-1,3-D	ichloropropene0.5U	1

108-88-3-----Toluene\_

10061-02-6----trans-1,3-Dichloropropene\_

127-18-4----Tetrachloroethene\_

Lab Name: Aquatec, Inc. Contract: 91000	17C1
Lab Code: AQUAI Case No.: 26431 SAS No.:	SDG No.:16D2
Matrix: (soil/water) <u>Water</u> Lab	Sample ID:
Sample wt/vol:25(g/mL)mL	File ID: <u>G134931I3V</u>
Level: (low/med) LOW Date	e Received:05/21/91
. Date	e Analyzed:05/23/91
Column: (pack/cap) <u>CAP</u> Dilu	ution Factor: 1.0
	RATION UNITS: ug/Kg) <u>ug/L</u> Q
142-28-9	0.5
124-48-1Dibromochloromethane	0.5 U
106-93-4 <del>1,2-Dibromoothane</del>	
591-78-6 <del>2 Немаполе</del>	5
108-90-7Chlorobenzene	0.5 U
630-20-6	
100-41-4Ethylbenzene	0.5 U
1330-20-7Xylene (total)	0.5 U
100-42-5 <del>Styrens</del>	0.5 U.S
75-25-2Bromoform	0.5 U
98-82-8 <del>Loopropylbensens</del>	0.5 U
108-86-1 <b>Bromobonsono</b>	
96-18-4	0.5 W
79-34-51,1,2,2-Tetrachloroethane_	0.5 U
103-65-1	
95-49-82-Chlorotoluene	0.5 U
106-43-44-Chlorotoluene_	0.5 U
108-67-81,3,5-Trimethylbenzene	
98-06-6tert-Butylbenzene	0.5 U
95-63-61,2,4-Trimethylbenzene_	0.5 U
135-98-8sec-Butylbenzene_	0.5 U
541-73-11,3-Dichlorobenzene	0.5 U
106-46-71,4-Dichlorobenzene	0.5 U
99-87-64-Isopropyltoluene	0.5 U
95-50-11,2-Dichlorobenzene	0.5 U
104-51-8n-Butylbenzene	0.5 U
96-12-81,2-Dibromo-2-chloropropane	0.5 U
120-82-11,2,4-Trienlorobenzene	0.5 U
91-20-3Naphtbalene	0.5 U
87-68-3Hexachlorobutadiene	0.5 U
87-61-6 <del>1,2,3 Trichlorobensens</del>	

FORM I VOA-2

Q

# 524.2 VOLATILE ORGANICS ANALYSIS DATA SHEET

CAS NO.

Lab Name:	: <u>Aquatec</u>	, Inc. Contra	ct: <u>91000</u>	17C2
Lab Code:	AOUAI	Case No.: <u>26431</u>	SAS No.:	SDG No.:16D2
Matrix: (	(soil/water)	Water	Lab Sample	ID:134932
Sample wt	:/vol:		Lab File ID	: <u>G134932V</u>
Level: (	(low/med)	LOW	Date Receiv	ed:05/21/91
			Date Analyz	ed: <u>05/23/91</u>
Column:	(pack/cap)	CAP	Dilution Fa	ctor:1.0
			CONCENTRATION U	NITS:

COMPOUND (ug/L or ug/Kg) ug/L

75-71-8	Dichleredifluorenethane		<u> </u>
	Chloronothano	0.5	130
75-01-4	Vinyl Chloride	8	
74-83-9	<del>Dromomothano</del>	0.5	
75-00-3	Chloroethane	2	
75-69-4	Trichlorofluoromethane	0.5	
75-35-4	1,1-Dichloroethene	0.5	U
75-15-0	Carbon Disulfide	0.5	
67-64-1	Rectone	<del>12</del>	
75-09-2	Methylene Chloride	0.5	
156-60-5	trans-1,2-Dichloroethene	0.9	·
	1,1-Dichloroethane	0.5	U
	2,2 Dichleropropano	0.5	
	cis-1,2-Dichloroethene	24	
74-97-5	Dromochloromethane	0.5	
	Chloroform	0.5_	Ü
71-55-6	1,1,1-Trichloroethane	0.3	J
	Carbon Tetrachloride	0.5	U
78-93-3	Dubanono	<u> </u>	
563-58-6	<del>@,1 Dichloropropenc</del>	0.5	
71-43-2	Benzene	0.5	U
	1,2-Dichloroethane	0.5	U
79-01-6	Trichloroethene		
	1,2-Dichloropropane	0.5	U
	Dibromomethane	0.5	
75-27-4	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
.08-88-3		0.4	<u>J</u>
	trans-1,3-Dichloropropene	0.5	U
.08-10-1	<del></del>		<del>- U</del>
	e e o muichlanachbana	0.5	Ū
79-00-5	1,1,2-Trichloroethane	_	

Lab Name: Aquatec, Inc. Contract: 91000	17C2
Lab Code: AQUAI Case No.: 26431 SAS No.:	SDG No.:16D2
Matrix: (soil/water) Water Lab S	ample ID: <u>134932</u>
Sample wt/vol: 25 (g/mL) mL Lab F	ile ID: <u>G134932V</u>
Level: (low/med)LOW Date :	Received: 05/21/91
Date 2	Analyzed: <u>05/23/91</u>
Column: (pack/cap) <u>CAP</u> Dilut:	ion Factor:1.0
	rion Units: /Kg) <u>ug/L</u> Q
142-28-9	0.5
124-48-1Dibromochloromethane	0.5 U
106-93-4 <del>-1,2-Dibremeethane</del>	· · · · · · · · · · · · · · · · · · ·
591-78-6 <del>2 Hexanone</del>	5
108-90-7Chlorobenzene	0.5 U
100-41-4Ethylbenzene	0.5 U
1330-20-7Xylene (total)	0.5 U
100-42-5 <del></del>	0.5
75-25-2Bromoform	0.5 U
98-82-8 <del>Isopropylbensono</del>	0.5 3
108-86-1 <del>Dromobenzene</del>	0.5 2
96-18-4	0.5 U
79-34-51,1,2,2-Tetrachloroethane	0.5
103-65-1 <del>n-Propylbensons</del>	
95-49-82-Chlorotoluene	
106-43-44-Chlorotoluene	
108-67-81,3,5-Trimethylbenzene	
98-06-6tert-Butylbenzene	
95-63-61,2,4-Trimethylbenzene	0.5
135-98-8sec-Butylbenzene	0.5
541-73-11,3-Dichlorobenzene	0.5
106-46-71,4-Dichlorobenzene	0.5 U
99-87-64-Isopropyltoluene 95-50-11,2-Dichlorobenzene	0.5 U
104-51-8n-Butylbenzene	0.5 U
96-12-81,2-Dibromo-2-chloropropane	0.5 U
120-82-11,2,4-Trienlorobenzene	0.5 U
1,2,4-11 ciliotobelizelle	——————————————————————————————————————

FORM I VOA-2

91-20-3----Naphtbalene

87-68-3-----Heyachlorobutadiene

U

U

0.5

0.5

Lab Name:Aquatec	. Inc. Contrac	:t:91000	17C3 ·
Lab Code: AOUAI	Case No.: <u>26431</u>	SAS No.: SDG No.	:16D2
Matrix: (soil/water)	Water	Lab Sample ID:	134933
Sample wt/vol:		Lab File ID:	3134933I2V
Level: (low/med)	LOW	Date Received:	05/21/91
		Date Analyzed:	05/30/91
Column: (pack/cap)	CAP	Dilution Factor: _	1.0
CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)ug/L_	o

	COMPOUND (dg/L of dg/k)	g/ <u>uu/L</u>	<del> </del>
75-71-8	<del>Dishlerediflueremethens</del>	0.5	
74-87-3	Chlororothano	<u> </u>	- 130
75-01-4	Vinyl Chloride	0.5	ַ
	Bromomethane	0.5	
	Chloroethane	0.5	U
75-69-4	<del>Trichlorefluoremethane</del>	0.5	
	1,1-Dichloroethene	0.5	U
	<del>Carbon Diculfido</del>	0.5	
67-64-1		19	<del></del>
	Methylene Chloride	0.5	BU
156-60-5	trans-1,2-Dichloroethene	0.5	U
	1,1-Dichloroethane	0.5	<u>U</u>
	<del>872 Dichlereprepanc</del>	0.5	
156-59-4	cis-1,2-Dichloroethene	0.5	<u> </u>
74-97-5	Dromochloromothano		
	Chloroform	0.5	<u> </u>
71-55-6	1,1,1-Trichloroethane	0.5	<u> </u>
56-23-5	Carbon Tetrachloride	0.5	<u> </u>
78-93-3	<del>% Dubanono</del>		
563-58-6			
71-43-2	Benzene	0.5	UJ
107-06-2	1,2-Dichloroethane	0.5	ប
79-01-6	Trichloroethene	0.5	J
78-87-5	1,2-Dichloropropane	0.5_	U
74-95-3	Dibromomethane	0.5	
75-27-4	Bromodichloromethane	0.5_	U
10061-01-5	cis-1,3-Dichloropropene	0.5	U
108-88-3	Toluene	0.2	J
10061-02-6	trans-1,3-Dichloropropene	0.5	U
	+ Methyl 2 Pentanene	5	Ü
		<del></del>	
	1,1,2-Trichloroethane	0.5	U _

	İ	1702	
Lab Name: Aquatec, Inc. Contract:	91000	17C3	
Lab Code: AQUAI Case No.: 26431 SAS No	o.: s	DG No.:	16D2
Matrix: (soil/water) <u>Water</u>	Lab Sample I	D: <u>134933</u>	
Sample wt/vol: 25 (g/mL) mL	Lab File ID:	G134933	I2V /
Level: (low/med)LOW	Date Receive	d:05/21/	91 /
	Date Analyze		
Column: (pack/cap) <u>CAP</u>	Dilution Fac		
	CENTRATION UN		
CAS NO. COMPOUND (ug/L			Q
142-28-9 <del>1,2-Dichleropropane</del>			
124-48-1Dibromochloromethane		0.5	U
106-93-4		0.5	- U
591-78-6 <del>% Немалеле</del>			<u> </u>
108-90-7Chlorobenzene_		0.5	<u> UJ</u>
630-20-6 <del>1,1,2,2 Tetrachloreoth</del>	anc	0.5	
100-41-4Ethylbenzene		0.5	<u> </u>
1330-20-7Xylene (total)		0.5	<u> </u>
100-42-5Bryrene		0.5	U
98-82-8 <del>Isopropylbensens</del>		0.5	
108-86-1 <del>Dromobenseno</del>		9.5	
96-18-4		0.5	
79-34-51,1,2,2-Tetrachloroetha	ane	0.5	U
103-65-1		0.5	
95-49-82-Chlorotoluene		0.5	70
106-43-44-Chlorotoluene		0.5	U
108-67-81,3,5-Trimethylbenzene_		0.5	U
98-06-6tert-Butylbenzene		0.5	U
95-63-61,2,4-Trimethylbenzene_		0.5	U
135-98-8sec-Butylbenzene		0.5	U
541-73-11,3-Dichlorobenzene		0.5	<u>t</u>
106-46-71,4-Dichlorobenzene		0.5	<u>II</u>
99-87-64-Isopropyltoluene		0.5	n
95-50-11,2-Dichlorobenzene		0.5	<u>U</u>
104-51-8n-Butylbenzene		0.5	U
96-12-81,2-Dibromo-2-chloropro		0.5	<u> </u>
120-82-11,2,4-Trienlorobenzene_		0.5	<u>U</u> .
91-20-3Naphtbalene 87-68-3Herachlorobutadiene		0.5	
87-68-3Heldchlorobutadiene		0.5	

FORM I VOA-2

Lab Name: <u>Aquatec, Inc.</u>		7D1 _
Lab Code: <u>AQUAI</u> Case No.:	<u>26431</u> SAS No.: SDG No.:	16D2
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: 13	4934
Sample wt/vol: 25 (g/m	mL) <u>mL</u> Lab File ID: <u>G13</u>	4934V
Level: (low/med) LOW	Date Received:05	/21/91
-	Date Analyzed:05	/23/91 -
Column: (pack/cap) <u>CAP</u>	Dilution Factor:	1.0
	CONCENTRATION UNITS:	

CAS NO.	COMPOUND (ug/L or ug/Kg	g) <u>ug/L</u>	Q
	<del>Dichlorodifluoromothano</del>	0.5	
	Chloromothano		
	Vinyl Chloride		U
	Bromomothano	0.5	<del>-</del>
	Chloroethane	0.4	<u> J</u>
	<del>-Trichlorofluoromethane</del>	0.5	
	1,1-Dichloroethene	0.5	<u> </u>
	Carbon Disalfide	0.5	
67-64-1			
	Methylene Chloride	0.2	BOL!
156-60-5	trans-1,2-Dichloroethene	0.5	<u> </u>
	1,1-Dichloroethane	0.5	<u> </u>
590-20-7	2,2 Dichloropropenc	0.5	
156-59-4	cis-1,2-Dichloroethene	0.5	<u>U</u>
74-97-5	Bromochloromethane	0.5	
	Chloroform_	0.5	<u> </u>
71-55-6	1,1,1-Trichloroethane	0.5	<u> </u>
56-23-5	Carbon Tetrachloride	0.5	<u> </u>
78-93-3	<del>2-Dubanene</del>	= = = = = = = = = = = = = = = = = = = =	
563-58-6	171 Dichleropropens	0.5	
71-43-2		0.5	<u>U</u>
107-06-2	1,2-Dichloroethane	0.5	
79-01-6	Trichloroethene	0.5	Ü
78-87-5	1,2-Dichloropropane	0.5	<u>U</u>
	Dibromomothane	0.5	<del>"</del>
	Bromodichloromethane	0.5	<u>U</u>
	cis-1,3-Dichloropropene	0.5	<u>U</u>
108-88-3			J
	trans-1,3-Dichloropropene	0.5	<u>U</u>
	4 Methyl 2 Pentanone	5	<u> </u>
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	U

		1
Lab Name: Aquatec, Inc. Contrac	t: 91000	
Lab Code: AQUAI Case No.: 26431	,	
Matrix: (soil/water) <u>Water</u>	Lab Sample ID: 134934	
Sample wt/vol: 25 (g/mL) mL	Lab File ID: G134934V	
Level: (low/med) LOW	Date Received: 05/21/91	
	Date Analyzed:05/23/91	
Column: (pack/cap) <u>CAP</u>	Dilution Factor:1.0	
CAS NO. COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L Q	
142-28-9 <del>1,3-Bichlersprope</del>	0.5	_
124-48-1Dibromochlorometh	nane 0.5 U	-1
106-93-4 <del>1,2 Dibromoothane</del>	0.5	-
591-78-6 <del>б-Неналопо</del>	5 0	
108-90-7Chlorobenzene_	0.5 U	-
630-20-6 <del>1,1,1,3 Tetrachle</del>	roothane 0.5 U	-
100-41-4	0.5 U	-
100-41-4Ethylbenzene_ 1330-20-7Xylene (total)	0.5 U	-
100-42-5 <del>Styrens</del>	0.5	-
75-25-2Bromoform	0.5 U	-(
98-82-8		- 1
108-86-1	0.5	<b>-</b>
96-18-4		- ``
79-34-51,1,2,2-Tetrachlo		- 22
103-65-1	0.5	-  🖫
95-49-82-Chlorotoluene	0.5 U	-   <
106-43-44-Chlorotoluene	0.5 U	-  \
108-67-81,3,5-Trimethylber	nzene U.5 U	-47
98-06-6tert-Butylbenzene	0.5 U	-K
95-63-61,2,4-Trimethylben	nzene0.5U	-  ~
135-98-8sec-Butylbenzene	0.5 U	-
541-73-11,3-Dichlorobenzer		-
106-46-71,4-Dichlorobenzer	ne 0.5 U	-
99-87-64-Isopropyltoluene	0.5 U	-
95-50-11,2-Dichlorobenzer		-
104-51-8n-Butylbenzene	0.5 U	-
96-12-81,2-Dibromo-2-chlo		-
120-82-11,2,4-Tri-nlorober		-
91-20-3Naphtbalene	0.5 U	-1
87-68-3Heyachlorobutadier		-
87-61-6 <del>1,2,3 Trichlorober</del>		-
1		- (

Lab Name: Aquatec	, Inc. Contrac	t: <u>91000</u>	17D2
Lab Code: AQUAI	Case No.: <u>26431</u>	SAS No.: SDO	G No.:16D2
Matrix: (soil/water)	<u>Water</u>	Lab Sample ÍD	134935
Sample wt/vol:		Lab File ID:	G134935V
Level: (low/med)	LOW	Date Received:	05/21/91
		Date Analyzed:	05/23/91
Column: (pack/cap)	CAP	Dilution Facto	or:1.0
CAS NO.	COMPOUND	CONCENTRATION UNIT	

75-71-8	<del>Dichlorodifluoromethane</del>		U
74-87-3	Chloromothano	0.5	Ü
75-01-4	Vinyl Chloride	0.4	J
	Bromomothano	8.5	
75-00-3	Chloroethane	2	.
75-69-4	Trichlorofluoromethano	0.5	
75-35-4	1,1-Dichloroethene	0.5	U
	Carbon Diculfido	0.5	
	<del>Victorio</del>	<del></del>	<del>  ""</del>
75-09-2	Methylene Chloride	0.6	با کار
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
	<del>C,2 Dichloropropanc</del>	0.5	
	cis-1,2-Dichloroethene	2	
	Bromochloromothano	<del></del>	
	Chloroform	0.5	U
1-55-6	1,1,1-Trichloroethane	0.3	
6-23-5	Carbon Tetrachloride	0.5	<u>U</u>
8-93-3	2 Dutanone	<u> </u>	
63-58-6	1,1 Dichlerepropens	0.5	
1-43-2	Benzene	0.5	<u> U</u>
07-06-2	1,2-Dichloroethane	0.5	
9-01-6	Trichloroethene	3	<u> </u>
8-87-5 <del></del>	1,2-Dichloropropane	0.5	<u> </u>
	Dibromomothano	0.5	
	Bromodichloromethane	0.5	U
0061-01-5	cis-1,3-Dichloropropene		U
	Toluene	0.2	J
	trans-1,3-Dichloropropene	0.5	<u> </u>
	4-Methyl-2-Pentanone		<del>- U -</del>
	1,1,2-Trichloroethane	0.5	U
27-18-4	Tetrachloroethene	0.5	U

Lab Name:Aquateo	r Inc. Contra	ct: 91000	17D2		
Lab Code: AQUAI			SDG No.:	16D2	_
Dab code:			<u> </u>	TODE	
Matrix: (soil/water)	Water	Lab Sample	ID: <u>13493</u>	5	
Sample wt/vol:		Lab File I	D: <u>G13493</u>	5V	
Level: (low/med)	LOW	Date Recei	ved: <u>05/21</u>	/91	
		Date Analy	zed: <u>05/23</u>	/01	
		Date Mary	zeu	(31	
Column: (pack/cap)	<u>CAP</u>	Dilution F	actor:	1.0	
		CONCENTRATION	INTTS.		
CAS NO.	COMPOUND			Q	
			1	1	-
	1,3-Dichloroprop		0.5	<del>  "</del>	_
	Dibromochloromet		0.5	<u> </u>	_
	<del>1,2-Dibromoethar</del>		0.5	<del>  "</del>	_
591-78-6	<del>2-Hexanono</del>		5		-
108-90-7	Chlorobenzene		0.5	U	-
630-20-6	<del>1,1,1,2 Tetrach</del>	<del>orocthane</del>	0.5		.]
100-41-4	Ethylbenzene		0.5	U	.
1330-20-7	Xylene (total)		0.5	U	
100-42-5	<del>Styrono</del>			- U	.  (
75-25-2	Bromoform		0.5	U	
98-82-8	<del>Isopropylkonsons</del>		0.5	<u> </u>	. :
108-86-1	<del>Dromobonsono</del>		0.5	<u> </u>	
96-18-4	<del>-1,3,3-Wrichlore</del> p	zepane		<u> </u>	.   😽
79-34-5	1,1,2,2-Tetrachl	oroethane	0.5	U	-
103-65-1	<del>-n-Propylbonsono</del> _				
95-49-8	2-Chlorotoluene_		0.5	U	2.2
106-43-4	4-Chlorotoluene_		0,5	U	1
108-67-8	1,3,5-Trimethylb	enzene		U	
98-06-6	tert-Butylbenzen	e	0.5	U	1
95-63-6	1,2,4-Trimethylb	enzene	0.5	U	1
	sec-Butylbenzene		0.5	U	
	1,3-Dichlorobenz		0.5	Ü	
	1,4-Dichlorobenz		0.5	U	
	4-Isopropyltolue		0.5	U	1
	1,2-Dichlorobenz		0.5	U	
	n-Butylbenzene		0.5	U	1
	1,2-Dibromo-2-ch	loropropane	0.5	U	
	1,2,4-Trienlorob		0.5	U	
	Naphtbalene		0.5	U	
	Herachlorobutadio	ene	0.5	U	
07 61 6					!

FORM I VOA-2

Lab Name: <u>Aquatec</u>	, Inc. Contrac	t: <u>91000</u>	17D3
Lab Code: <u>AOUAI</u>	Case No.: <u>26431</u>	SAS No.: SI	OG No.:16D2
Matrix: (soil/water)	Water	Lab Sample II	D: <u>134936</u>
Sample wt/vol:		Lab File ID:	G134936V
Level: (low/med)	LOW	Date Received	1:05/21/91
		Date Analyzed	l: <u>05/23/91</u>
Column: (pack/cap)	CAP	Dilution Fact	or: 1.0
CAS NO.	COMPOUND	CONCENTRATION UNI	

75-71-8	Dighlorodifluoromethane		<del></del>
74-87-3	Chloromothano	0.5	- <del>- "</del>
	Vinyl Chloride	0.5	U
	Byonomothano	0.5	
	Chloroethane	0.5	U
	Trichlorofluoromethane	0.5	
75-35-4	1,1-Dichloroethene	0.5	U
	Garbon Digulfido	0.5	<u>;;</u>
67-64-1	<b>l</b> ostono		
	Methylene Chloride	0.3	BJ (
156-60-5	trans-1,2-Dichloroethene	0.5	U
75-34-3	1,1-Dichloroethane	0.5	U
590-20-7	2,2-Dichleropropano	0,5	
156-59-4	cis-1,2-Dichloroethene	0.5	Ŭ
4-97-5	Brezechleremethane	0.5	
7-66-3	Chloroform	0.5	U
	1,1,1-Trichloroethane	0.5	U
	Carbon Tetrachloride	0.5	U
	}-Dutanono		
63-58-6		0.5	
1-43-2	Benzene	0.5	U
.07-06-2	1.2-Dichloroethane	0.5	บ
9-01-6	Trichloroethene	0.5	U
8-87-5	1,2-Dichloropropane	0.5	U
4-95-3	Dibromomobhane	0.5	U
	Bromodichloromethane	0.5	U
	cis-1,3-Dichloropropene	0.5	U
08-88-3		0.2	J
	trans-1,3-Dichloropropene	0.5	U
	+ Methyl 2 Pentanone		
	1,1,2-Trichloroethane	0.5	U
	Tetrachloroethene	0.5	U ~

Iah Namo. Amiate	ec, Inc. Contra	oct: 91000	17D3	
	<del></del>		SDC No. 1	1602
Lab Code: AQUAI	Case No.: <u>26431</u>	SAS NO.:	SDG NO.:	1002
Matrix: (soil/water	) <u>Water</u>	Lab Sample	ID: <u>13493</u>	6
Sample wt/vol:	25(g/mL) <u>mL</u>	Lab File ID	G1349	36V
Level: (low/med)	LOW	Date Receiv	red: 05/21	/91
		Date Analyz	ed: <u>05/23</u>	/91
Column: (pack/cap)	CAP	Dilution Fa	ctor:	1.0
CAS NO.	COMPOUND	CONCENTRATION U		Q
142-28-9	<del>1,3 Dichleropre</del>	- 1		
	Dibromochlorome		0.5	U
	<del>1.3-Dibromoetha</del>		0.5	
	<del>-2 liexanone</del>			- Ua
108-90-7	Chlorobenzene		0.5	<u>ט</u>
630-20-6	Chlorobenzene_	loroethane	0.5	- "
100-41-4	Ethylbenzene		0.5	U
1330-20-7	Xylene (total)_		0.5	U
100-42-5	9 <del>tyrene</del>		0,5	<u> </u>
75-25-2	Bromoform		0.5	<u> </u>
98-82-8	<del>Ioopropylbensend</del>		0.5	
108-86-1	<del>Dromobenzene</del>		0.5	<u> </u>
96-18-4	<del>-2,2,2 Orichloro</del> ,	propano	0.5	-
79-34-5	1,1,2,2-Tetrach	loroethane	0.5	<u> </u>
103-65-1	<del>n-Propylbonson</del> o		0.5	
95-49-8	2-Chlorotoluene		0.5	U
	4-Chlorotoluene		0.5	<u> </u>
108-67-8	1,3,5-Trimethyl	enzene	0.5	U
	tert-Butylbenzer		0.5	<u> </u>
	1,2,4-Trimethylk		0.5	Ü
	sec-Butylbenzene		0.5	<u> </u>
	1,3-Dichlorobenz		0.5	<u>U</u>
	1,4-Dichlorobenz		0.5	_ U
	4-Isopropyltolue		0.5	<u>U</u>
	1,2-Dichlorobenz	ene	0.5	<u> </u>
	n-Butylbenzene		0.5	<u> </u>
	1,2-Dibromo-2-ch		0.5	<u> </u>
120-82-1	1,2,4-Trichlorob	enzene	0.5	<u>U</u>
	Naphthalene		0.5	<u>U</u>
	Herachlorobutadi		0.5	<u>U</u>
87-61-6	Trichlereb	ensene	0.5	

Lab Name: Aquatec	. Inc. Contract: 9	1801 -
Lab Code: AOUAI	Case No.: <u>26431</u> SAS No	.: SDG No.:16D2
Matrix: (soil/water)	Water	Lab Sample ID: 134938
Sample wt/vol:		Lab File ID: G134938I2V
Level: (low/med)	LOW	Date Received:05/21/91 ·
	,	Date Analyzed: 06/04/91
Column: (pack/cap)	CAP	Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/L Q

	COMPOUND (dg/L of dg/K		
	<del>Dichlerediflueremethane</del>	0.5	
	Chloremethane		<del></del>
75-01-4	Vinyl Chloride		<u>J</u>
	Bremenethane	<del>0-5</del>	
	Chloroethane	_  <del></del>	1
	<del></del>	0.5	
	1,1-Dichloroethene	0.5	<u> </u>
	Carbon Dioulfido		- 17.
/5-09-2	Methylene Chloride		BU
	trans-1,2-Dichloroethene	0.5	- UI
75-34-3	1,1-Dichloroethane	0.5	<u>U1</u>
590-20-7	2,2 Dichloropropane	<del></del>	- Uo
156-59-4	cis-1,2-Dichloroethene		
74-97-5	Dromochloromethane		
67-66-3	Chloroform_		<u> </u>
71-55-6	1,1,1-Trichloroethane	0.5	<u>U.1</u>
56-23-5	Carbon Tetrachloride	0.5	<u> </u>
78-93-3	<del>2-Dutanono</del>		
563-58-6		0.5	
71-43-2	Benzene	0.5	n j
107-06-2	1,2-Dichloroethane	0.5	<u> </u>
79-01-6	Trichloroethene	3	1.
78-87-5	1,2-Dichloropropane	0.5	ַנט ַ
74-95-3	Sibromomothano	0.5	
75-27-4	Bromodichloromethane	0.5	
	cis-1,3-Dichloropropene	0.5	_ U J
L08-88-3	Toluene	0.2	_ J _
10061-02-6	trans-1,3-Dichloropropene	0.5	บัง
	4-Mothyl-2-Pontanono	5	
108-10-1			
	1,1,2-Trichloroethane	0.5	U

Lab Na	me: <u>Aquatec</u>	, Inc. Contra	et: <u>91000</u>	18C1	(
		Case No.: <u>26431</u>		SDG No.:	16D2
Matrix	: (soil/water)	Water	Lab Sample	ID: <u>13493</u>	18
Sample	wt/vol:		Lab File I	D: <u>G13493</u>	812V
Level:	(low/med)	LOW	Date Recei	ved: <u>05/21</u>	/91
•			Date Analy:	zed: <u>06/04</u>	/91
Column	(pack/cap)	CAP	Dilution Fa	actor:	1.0
·	CAS NO.	сомроиир	CONCENTRATION (		Q
	124-48-1 106-93-4	1,3-Dichlereprop Dibromochloromet	thane	0.5 0.5	<u>U</u>
	591-78-6 108-90-7	<del>Luanono</del>		0.5	<u>""</u>
	630-20-6	Chlorobenzene	loroethane	0.5	U
	1330-20-7	Ethylbenzene Xylene (total)		0.5	<u>U</u> Ū
1	75-25-2	Bromoform		0.5	UJ
ſ	108-86-1	Tremsbendens			U.
	79-34-5	1,1,2,2-Tetrachl 	oroethane	0.5	UJ
1	95-49-8	2-Chlorotoluene_ 4-Chlorotoluene_		0.5	U
1	108-67-8	1,3,5-Trimethylb tert-Butylbenzen	enzene	0.5	U
l	95-63-6	1,2,4-Trimethylb sec-Butylbenzene	enzene	0.5	U
	541-73-1	1,3-Dichlorobenz 1,4- <u>Dichlorobenz</u>	ene	0.5	
	99-87-6	4-Isopropyltolue 1,2-Dichlorobenz	ne	0.5	<u>u</u>
	104-51-8	n-Butylbenzene		0.5	<u> </u>
1 :	120-82-1	1,2-Dibromo-3 ch.	enzene	0.5	U
	91-20-3 87-68-3	Naphthalene	ene	0.5 0.5	<u>U</u> <u>U</u>

Lab Name: Aquateo	Inc. Contract:	91000	1901
Lab Code: <u>AQUAI</u>	Case No.: <u>26431</u> SAS N	o.: SDG	No.: <u>16D2</u>
Matrix: (soil/water)	Water	Lab Sample ID:	134939
Sample wt/vol:	25(g/mL) _mL	Lab File ID:	G134939I2V
Level: (low/med)	LOW	Date Received:	05/21/91
		Date Analyzed:	05/23/91
Column: (pack/cap)	CAP	Dilution Factor	1.0
	CON	CENTRATION INTES	•

# (ug/L or ug/Kg) ug/L

CAS NO.	COMPOUND (ug/L or ug/Kg		Q
	Dichleredifluoremethane	0.5	<del>-</del>
	Chlorenethane		
	Vinyl Chloride		<u> </u>
	Dromomethano	0.5	
	Chloroethane	0.8	
	<del>Trichlerefluoremethane</del>	<u> </u>	
	1,1-Dichloroethene	0.5	<u> </u>
/5-15-0	Curbon Disulfido		
67-64-1			
	Methylene Chloride		<u> </u>
156-60-5	trans-1,2-Dichloroethene	0.5	<u> </u>
75~34~3~~~~	1,1-Dichloroethane	0.5	U—
590-20-7	2,2 Dichleropropenc		
	cis-1,2-Dichloroethene		_UI
	Bromochloromothano		
	Chloroform	0.5	<u>U.J</u>
	1,1,1-Trichloroethane	0.5	<u> </u>
56-23-5	Carbon Tetrachloride	0.5	<u> </u>
78-93-3	<del>2 Dutanone</del>		
563-58-6	<del>171 Dichleropropenc</del>	0.5	
71-43-2	Benzene	0.5	<u>U.T.</u>
107-06-2	1,2-Dichloroethane	0.5	
79-01-6	Trichloroothene	0.5	U L
78-87-5	1,2-Dichloropropane	0.5	<u> </u>
74-95-3	Orbronomothano	0.5	<del></del>
75-27-4	Bromodichloromethane	0.5	UI
	cis-1,3-Dichloropropene	0.5	UL
108-88-3		0.5	U
	trans-1,3-Dichloropropene	0.5	UI
	4-Methyl 2 Pentanone		- U
79-00-5	1,1,2-Trichloroethane	0.5	<u> </u>
	Tetrachloroethene_	0.5	T.J

Lab Name: Aqua	tec, Inc. Contrac	:t: <u>91000</u>	18D1	
	Case No.: <u>26431</u>		SDG No.:	16D2
Matrix: (soil/wate	er) <u>Water</u>	Lab Sample	ID:13493	9
Sample wt/vol:		Lab File ID	: <u>G134939</u>	912V
Level: (low/med)	LOW	Date Receive	ed: <u>05/21</u>	/91
		Date Analyz	ed: <u>05/23</u>	91
Column: (pack/cap	) <u>CAP</u>	Dilution Fac	etor:	.0
CAS NO.	COMPOUND	CONCENTRATION UN		Q
142-28-9	<del>1,3 Dichloroprop</del> e	ano		- Us
124-48-1	Dibromochlorometh	hane	0.5	<u> </u>
106-93-4	<del>2,2-Dibremeethen</del>		0.5	
591-78-6	<del>Vienence</del>			\ <u> </u>
108-90-7	Chlorobenzene		0.5	<u>U</u> 2
630-20-6	<del>1,1,1,3-Tetrachl</del> c	eroothano	0.5	<del>                                     </del>
100-41-4	Ethylbenzene		0.5	U 4
1330-20-7	Xylene (total)		0.5	UI
100-42-5	<del>Ctyrono</del>			
	Bromoform		0.5	UJ
98-82-8	<del>Toopropylbensene</del>			
108-86-1	<del>Dromobonsono</del>		0_5	<del>                                     </del>
96-18-4	<del>1,2,2-@richloropr</del>	openo	9.5	
79-34-5	1,1,2,2-Tetrachlo	proethane	0.5	UI
103-65-1	<del>n Propylboncono</del>		0.5	
95-49-8	2-Chlorotoluene		0.5	
106-43-4	4-Chlorotoluene		0,5	<u>U</u>
108-67-8	1,3,5-Trimethylbe	enzene	0.5	<u>U</u>
98-06-6	tert-Butylbenzene		0.5	U
	1,2,4-Trimethylbe		0.5	<u> </u>
	sec-Butylbenzene_		0.5	<u> </u>
	1,3-Dichlorobenze		0.5	
	l,4-Nichlorobenze		_0_5	
	4-Isopropyltoluen		0.5	<u>U</u>
95-50-1	1,2-Dichlorobenze		0.5	<u>U</u>
	n-Butylbenzene		0.5	<u>U</u>
	1,2-Dibromo-o-chl		0.5	<u>U</u>
	1,2,4-Trichlorobe	nzene _	0.5	<u>U</u>
	Napht alene		0.5	<u> </u>
	Hexachlorobutadie		0.5	U
87-61-6	T,2,3 Trichlorobe	nzene		

FORM I VOA-2

Lab Name:Aquatec	. Inc. Contrac	t: <u>91000</u>	20C1 
Lab Code:AOUAI	Case No.: <u>26431</u>	SAS No.: SI	OG No.:16D2
Matrix: (soil/water)	<u>Water</u>	Lab Sample II	134940
Sample wt/vol:	25(g/mL) _mL	Lab File ID:	G134940I2V
Level: (low/med)	LOW	Date Received	:05/21/91
		Date Analyzed	:06/03/91
Column: (pack/cap)	CAP	Dilution Fact	or: <u>1.0</u>
CAS NO.	COMPOUND	CONCENTRATION UNI	<del></del>

CAS NO.	COMPOUND (ug/L or ug/Ko	g) <u>ug/L</u>	Q
	Dichloredifluorenethane		
	Chloremothano		
75-01-4	Vinyl Chloride	0.5	<u> </u>
	<del>Dromomethane</del>	0.5	
	Chloroethane	0.5	J
	Crichlorofluoromothans	0.5	
	1,1-Dichloroethene	0.5	U
	Garben-Digulfido		
	Acctone		
	Methylene Chloride		Bu
156-60-5	trans-1,2-Dichloroethene		<u> </u>
75-34-3	1,1-Dichloroethane	0.5	<u> </u>
590-20-7	3,3-Dichloropropano	0.5	
156-59-4	cis-1,2-Dichloroethene	0.5	<u> </u>
74-97-5	<del>Bromochlerenethane</del>	0.5	
67-66-3	Chloroform	0.5	<u> </u>
71-55-6	1,1,1-Trichloroethane	0.5	<u>U</u>
56-23-5	Carbon Tetrachloride	0.5	<u> </u>
78-93-3	<del>Q-Dubanono</del>		
563-58-6	<del>1,1 Dichleropropens</del>	0.5	<u> </u>
	Benzene	0.5	<u>U</u>
107-06-2	1,2-Dichloroethane	0.5	<u> </u>
	Trichloroethene	0,5	
78-87-5	1,2-Dichloropropane	0.5	<u>U</u>
	<del>Dibromomothano</del>	0-5	<u></u>
	Bromodichloromethane	0.5	U
10061-01-5	cis-1,3-Dichloropropene	0.5	<u>U</u>
	Toluene	0.5	U
10061-02-6	trans-1,3-Dichloropropene	0.5	U
	4-Methyl-3-Pentanone		<del>U</del>
79-00-5	1,1,2-Trichloroethane	0.5	U
127-18-4	Tetrachloroethene	0.5	<u> </u>

Lab Name: Aquatec	. Inc. Contrac	t: 91000	20C1
		SAS No.: SDG	No : 16D2
Lab code. AOUAT	case no <u>28431</u>	3A3 NO 5DG	1602
Matrix: (soil/water)	Water	Lab Sample ID:	134940
Sample wt/vol:		Lab File ID:	G134940I2V
Level: (low/med)	LOW	Date Received:	05/21/91
		Date Analyzed:	06/03/91
Column: (pack/cap)	CAP	Dilution Factor	:1.0
CAS NO	COMBOTHE	CONCENTRATION UNITS	·

CAS NO.	COMPOUND (ug/L or ug/Kg	) <u>ug/L</u>	Q
142-28-9	<del>1,9 Dichloropropanc</del>		<u> </u>
124-48-1	Dibromochloromethane	0.5	U
	<del>1-1-Dibsencethane</del>		1
	2-Henanene		
	Chlorobenzene	0.5	U
	1,1,1,2 Tetrachlorocthane	0,5	U
	Ethylbenzene	0.5	U
	Xylene (total)	0.5	U
100-42-5			- 17
	Bromoform	0.5	U
	<del>Teepropylboneone</del>	0.5	· ·
108-86-1		0.5.	II.
96-18-4		0.5	Ü-
79-34-5	1,1,2,2-Tetrachloroethane	0.5	U
103-65-1		0.5	
95-49-8	2-Chlorotoluene	0.5	0
	4-Chlorotoluene	0.5	U
	1,3,5-Trimethylbenzene	0.5	U
	tert-Butylbenzene	0.5	U
	1,2,4-Trimethylbenzene	0.5	U
	sec-Butylbenzene	0.5	U
541-73-1	1,3-Dichlorobenzene	0.5	บ
106-46-7	1_4-Dichlorobenzene	0.5	IJ
99-87-6	4-Isopropyltoluene	0.5	Ü
	1,2-Dichlorobenzene	0.5	U
	n-Butylbenzene	0.5	Ŭ
	1,2-Dibromo-3 chloropropane	0.5	Ŭ
120-82-1	1,2,4-Trienlorobenzene	0.5	Ü
91-20-3	Naphth lene	0.5	U
	Heyachlorobutadiene	0.5	Ü
87-61-6			



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/17/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Treatment system samples from both the UniFirst and W.R. Grace treatment systems were included in this sample delivery group. Data quality for this sample delivery group was good.

Only one set of quality control samples was analyzed with this sample delivery group. Because of this, the following samples were not analyzed by the laboratory: S1-20DUP, S1-20MS, and S1-20MSD.

Cooler temperatures upon receipt of samples by the laboratory were  $5^{\circ}\text{C}$  for the W.R. Grace samples and  $7^{\circ}\text{C}$  for the UniFirst samples. Temperatures of outside the  $4^{\circ}\text{C}$   $\pm$   $2^{\circ}\text{C}$  range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Case Narrative

Ten samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 17, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
V131V8FD	3649	05/17/91
V131V8FS	3648	05/17/91
V131V8FB	3650	05/17/91
V154V8FS	3652	05/17/91
V197V8FS	3651	05/17/91
S1-20	3653	05/17/91
S1-20TB	3655	05/17/91
S4-18	3660	05/17/91



## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in all samples.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met on 5/17/91 (Instrument G) with the exception of the RRF for 2-butanone (actual 0.030; criteria 0.01) and the %RSD for 2-butanone (actual 39.9; criteria 30). Detection limits for 2-butanone were rejected in Samples V154V8FS, S1-20, and S1-20TB.

Initial calibration criteria were met on 5/24/91 (Instrument J).

Initial calibration criteria were met on 5/28/91 (Instrument J).

Initial calibration criteria were met on 5/28/91 (Instrument G) with the exception of the RRF for 2-butanone (actual 0.077; criteria 0.1). Detection limits for 2-butanone were rejected in Sample S4-18.

#### B. Continuing

Continuing calibration criteria were met on 5/25/91 with the exception of the % difference for carbon disulfide (actual 27.2; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/27/91 with the exception of the % difference for acetone (actual 43.0; criteria 25) and vinyl acetate (actual 43.9; criteria 25). Data were not affected.



Continuing calibration criteria were met on 5/28/91 with the exception of the RF for 2-butanone (actual 0.061; criteria 0.1) and the % difference for bromomethane (actual 43.8; criteria 25) and acetone (actual 53.2; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/29/91.

#### IV. Blanks

Methylene chloride was reported in Method Blank VBLK02. Acetone was reported in Method Blanks VBLK01 and VBLK02 and in Trip blank V131V8TB. Tetrachloroethene was reported in Method Blank VBLK03. The results for acetone in Samples V131V8TB, V131V8FS, V131V8FSMS, and V131V8FSMSD were qualified as less than the reported value.

According to the Form I, Trip Blank V131V8TB was run at a 10-fold dilution. This is inappropriate for a trip blank.

### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

# VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V131V8FS. The percent recoveries for trichloroethene in the MS and the MSD were below QC criteria. Trichloroethene in Samples V131V8FS and V131V8FD was qualified as estimated. The percent recovery for 1,1-dichloroethene in the MS was below QC criteria. No positive results for 1,1-dichloroethene were reported in field samples; data were not affected.

Tetrachloroethene was reported in Samples V131V8FD, V131V8FSMS, and V131V8FSMSD at concentrations of 24, 260, and 54 ug/L, respectively. This compound was not detected in V131V8FS. Tetrachloroethene concentrations were rejected in these three samples. The compound 2-butanone was reported in the MSD at 150 ug/L, but not in the field sample, duplicate, or MS. The concentration of 2-butanone in the MSD was rejected.

Concentrations of the spiking compounds were not reported on the Forms I for the MSD.



# VII. Field Duplicates

Compounds and concentrations (in ug/L) reported in Samples V131V8FS and V131V8FD were as follows:

Compound	<u>V131V8FS</u>	<u>V131V8FD</u>
Vinyl Chloride	360	360
1,2-Dichloroethenes	990	960
Trichloroethene	500	480

Results were within QC criteria.

### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

# IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

# XII. System Performance

System performance requires attention. Manual integrations should be addressed. The trip blank associated with these samples was improperly diluted. Rsponse factor criteria shoull be monitored.

#### XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was good. Detection limits for aromatic compounds were estimated in all samples.

Detection limits for 2-Butanone were rejected in Samples V154V8FS, S1-20, S1-20TB, and S4-18.



Acetone results were qualified as less than the reported

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V131V8FD

Lab Name: PACE

Contract:

SDG No.: 00026

EFM SMITTLE NU.

Matrix: (soil/water) WATER

Lab Sample ID: 3649.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2713

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pach/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	; ; RT !=======	: EST. CONC.	: Q ;
1	 	! 	!	
3				; ;
5 6				
12				
14				
16				
19				
21				
23				
25. 26.				
28				

V131V8FD

Lab Name: PACE Contract:

SAS No.: SDG No.: 00025

Matrix: (soil/water) WATER Lab Sample ID: 3649.1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2713

Level: (low/med) LOW Date Received: 5/18/91

/ Moisture: not dec. 100.
Date Analyzed: 5/25/91

Column: (pac)/cap) PACK Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTR (ug/L or			(	2
1 74-07-2	Chloromethane		;	100.		
! 74-87-3	Bromomethane		;	100.		i
75-01-4	Vinyl Chloride		¦	360.	; ()	
1 75-00-3	Chloroethane		;	100.	i !U	,
. 75-09-3	Methylene Chlor		;	50.	: U	1
: 67-64-1	Acetone	*ue	'	100.	:0	1
1 75-15-0	Carbon Disulfic		;	50.	: U	
75-35-4	1,1-Dichloroeth	ene	;	50.	; U	- ;
1 75-34-3	1,1-Dichloroeth	200	;	50.	: U	- ;
: 540-59-0	1.2-Dichloroeth	ene (total:	;	960.	;	,
67-66-3	Chloroform	CHE COURT	`¦	50.	: U	•
107-06-0	Chloroform_ 1,2-Dichloroeth		;	50.	: U	•
78-93-3	2-Butanone	Sire	;	100.	: U	:
71-55-6	1,1,1-Trichloro		;	50.	: 0	
: 56-33-5	Carbon Tetrachl	oride	· į	50.	: U	!
108-05-4	Vinyl Acetate	O. 106	;	100.	: U	
75-27-4	Bromodichlorome	 thane	:	50.	: U	,
1 78-87-5	1,2-Dichloropro	nane	;	50.	: U	•
10061-01-5	cis-1,3-Dichlor	onronene	;	50.	: U	:
79-01-6	Trichloroethene	op. op	<u>;</u>	480.	:3	!
124-48-1	Dibromochlorome	thane	:	50.	: U	
79-00-5	1,1,2-Trichloro	ethane	;	50.	: U	. !
71-43-2	Benzene		<u>:</u>	50.	נטו	•
10061-02-6	Trans-1,3-Dichl	oropropene	;	50.	: U	•
75-25-2	Bromoform	or opropenc	:	50.	: U	•
108-10-1	4-Methyl-1-Pent	3000e	;	100.	: U	•
591-78-6	2-Hexanone		:	100.	: U	•
127-18-4	Tetrachloroethe		:	24.	; J	•
79-34-5	1,1,2,2-Tetrach	croethane	:	50.	:บ	,
108-88-3	Toluene	ion oconiana	;	50.	וחן	•
108-90-7	Chlorobenzene		;	50.	:UJ	,
100-41-4	Ethylbenzene		;	50.	:U)	•
100-40-5	Styrene		'	50.	رن، ډلا:	,
1330-20-7	Xylene (total)_		;	50.	: עט	'
	Ayrene (Cotal)		;	J.V.	, 000	,
			'		'	'

EPA SAMPLE NO.

V131V8FD

Lab Name: PACE Contract:

00025

Matrix: (soil/water) WATER Lab Sample ID: 3649.1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2713

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec. 100. Date Analyzed: 5/25/91

Column: (pac)/cap) PACK Dilution Factor: 10.00

		CONCENTRA				
CAS NO.	COMPOUND	(ug/L or	ug/k.g)	UG/L	۵	
!						,
74-87-3	Chloromethane		i	100.	·υ	;
74-83-9	Bromomethane			100.	: U	i
75-01-4	Vinyl Chloride			360.		
75-00-3	Chloroethane			100.	įυ	;
75-09-2	Methylene Chlor	ıde	;	50.	: U	;
67-64-1	Acetone		:	100.	١u	:
1 75-15-0	Acetone Carbon Disulfic	e		50.	: U	;
1 75-35-4	1,1-Dichloroeth	ene	!	50.	ŀU	1
	1,1-Dichloroeth			50.	:U	:
1 540-59-0	1.2-Dichloroeth	ene (total)	;	960.	;	;
1 67-66-3	Chloroform		:	50.	١U	} .
107-06-2	1,2-Dichloroeth	ane	;	50.	; U	;
1 78-93-3	2-Butanone			100.	١U	;
71-55-6	1.1,1-Trichlord	ethane	:	50.	:U	;
: 56-23-5	Carbon Tetrachl	oride	:	50.	: ບ	;
108-05-4	Vinyl Acetate _		:	100.	:ប	E I
75-27-4	Bromodichlorome	thane	;	50.	١U	;
1 78-87-5	1,2-Dichloropro	pane	1	50.	: U	1
110061-01-5	cis-1,3-Dichlor	opropene	!	50.	: Ų	1
79-01-6	Trichloroethene		;	480.	د:	;
124-48-1	Dibromochlorome	thane	;	50.	: U	;
79-00-5	1,1,2-Trichloro	ethane	1	50.	١U	:
1 71-43-2	Bénzene		;	50.	107	:
110061-02-6	Trans-1,3-Dichl	oropropene	;	50.	; U	;
1 75~25~2	Bromoform		;	50.	; U	;
108-10-1	4-Methy1-2-Pent	anone	;	100.	!U	:
591-78-6	2-Hexanone		;	100.	: U	;
1 127-18-4	Tetrachloroethe	ne	!	24.	; J	;
79-34-5	1,1,2,2-Tetrach	loroethane	;	50.	:U	1
108-88-3	Toluene		{	50.	107	1
108-90-7	Chlorobenzene _		;	50.	:n7	!
100-41-4	Ethylbenzene		:	50.	:n)	;
100-42-5	Styrene			50.	: W	;
1330-20-7	Xylene (total)_		;	50.	:UJ	;
· 			!			;

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V131V8FD

ETH DAMELE HU.

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00026

Matrix: (soil/water) WATER Lab Sample ID: 3649.1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2713

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec. 100. Date Analyzed: 5/25/91

Column: (pack/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

		·		
CAS NUMBER	:	; ; RT !======	;   EST. CONC. !=========	; ;
1				
2. 3			,	
4 5				 
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FORM I VOA-TIC

## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

V131V8FS

Matrix: (soil/water) WATER Lab Sample ID: 3648.3

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2712

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec. 100. Date Analyzed: 5/25/91

Column: (pack/cap) PACK Dilution Factor: 10.00

CAS NO.	COMPOUND	CONCENTRA (ug/L or			Ω	_
1 74-87-3	Chloromethane _		;	100.	: : U	;
! 74-83-9	Bromomethane		¦	100.	: U	1
! 75-01-4	Vinyl Chloride_		;	360.	1 0	;
1 75-00-3	Chloroethane		;	100.	! U	,
1 75-09-0	Methylene Chlor		;	50.	יט	
67-64-1	Acetone		;	68.	: JB	IL CAR
1 75-15-0	Carbon Disulfid	 p	;	50.	U	المالحدام بم
75-35-4	1,1-Dichloroeth	 ene	;	50.	: U	;
1 75-34-3	1,1-Dichloroeth	ane	;	50.	ΙÜ	•
1 540-59-0	1.2-Dichloroeth	ene (total)		990.	}	:
: 67-66-3	Chloroform		:	50.	: U	+
1 107-06-2	1.2-Dichloroeth	ane	:	50.	: U	1
1 78-93-3	2-Butanone		;	100.	: U	1
71-55-6	1,1,1-Trichloro	ethane	i	50.	١U	1
1 56-23-5	Carbon Tetrachl	oride	;	50.	: U	:
108-05-4	Vinyl Acetate _		;	100.	; U	:
1 75-27-4	Bromodichlorome	thane	;	5o.	¦ U	:
1 78-87-5	1,2-Dichloroprop	oane	!	50.	: U	;
110061-01-5	cis-1,3-Dichlore	opropene	:	50.	١U	1
1 79-01-6	Trichloroethene		;	500.	1)	1
124-48-1	Dibromochloromet	thane	;	50.	¦ U	
1 79-00-5	1,1,2-Trichloroe	ethane	;	50.	: U	:
71-43-2	Benzene		;	50.	۱n٦	;
(10061-02-6	Trans-1,3-Dichlo	propropene	;	50.	:U	1
75-25-2	Bromoform		!	50.	: U	;
108-10-1	4-Methyl-2-Penta	noue	!	100.	; U	:
591-78-6	2-Hexanone		!	100.	: U	!
127-18-4	Tetrachloroether	ne	!	50.	!U	1
79-34-5	<u>1</u> ,1,2,2-TetrachI	orcethane	<u> </u>	50.	10	;
108-88-3	Toluene		!	50.	: □7	:
108-90-7	Chlorobenzene		<u>!</u>	50.	:U7	
100-41-4	Ethylbenzene		<u>:</u>	50.	_	
100-42-5	Styrene		!	50.		
1330-20-7	Xylene (total)		<u>:</u>	50.	:07	i
					-	, <b>i</b>

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS .

V131V8FS Lab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00036

1atrix: (soil/waler) WATER Lab, Sample ID: 3648.3

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2712

Date Received: 5/18/91 .evel: (low/med) LOW

" Moisture: not dec. 100. Date Analyzed: 5/25/31

Dilution Factor: 10.00 Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

		<del></del>		
CAS NUMBER	COMPOUND NAME	, ; RT ;	EST. CONC.	. α :
:======================================		========	=======================================	! = = = = :
1.				
2.				;
: 3.				
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6				;
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8;				;
9;				
			!	
11		!		
12			;	i
13		i	i	;
14		;		
		;		;
1 1 7		;	!	
		;	'	;
10				
. 30			· · · · · · · · · · · · · · · · ·	
71		,		
22		,	;	
1 23				;
24			;	:
25		:	;	;
26		;	;	!
' 27		!		
28				!
1 301		;		:
		!.	:	

FORM I VOA-TIC

## VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3650.5

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2714

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec. 100. Date Analyzed: 5/25/91

Column: (pack/cap) PACk Dilution Factor: 10.00

CAS NO. COMPOUND	CONCENTRATIO		0	
: 74-87-3Chloromethane		! ! 100.	; ! ( )	;
74-83-9Bromomethane	'	100.	· <del></del>	· ·
75-01-4Vinyl Chloride_		100.	: U	:
75-00-3Chloroethane		100.	: U	:
75-09-2Methylene Chlori	 de :	50.	: U	!
: 67-64-1Acetone		. 65.	1 JOH	(127191
75-15-0Carbon Disulfide		50.	iu i	. <b>.</b>
: 75-35-41,1-Dichloroethe	ne :	50.	ŧÜ	<b>;</b>
: 75-34-31.1-Dichloroetha	ne :	50.	l U	<b>!</b>
<pre>540-59-01,2-Dichloroethe</pre>	ne (total) :	50.	: U	!
: 67-66-3Chloroform		50 <b>.</b>	: U	:
	ne:	50.	:U	!
78-93-32-Butanone	;	100.	:U	•
71-55-61,1,1-Trichloroe	thane:	50.	¦U	•
<pre>56-23-5Carbon Tetrachlo</pre>	ride :	50.	: U	
108-05-4Vinyl Acetate		100.	: U	}
: 75-27-4Bromodichloromet	hańe !	50.	:U	•
78-87-51,2-Dichloroprop	ane:	50.	יטו	
:10061-01-5cis-1,3-Dichloro	oropene:		; U :	
79-01-6Trichloroethene			ו ו	
124-48-1Dibromochloromet			: U :	
79-00-51,1,2-Trichloroe			;U ;	
71-43-2Benzene		50.	:07 :	
10061-02-6Trans-1,3-Dichlor			U	
75-25-2Bromoform		50.	ו ו	
108-10-14-Methyl-2-Pentar	none		U	
591-78-62-Hexanone			IU I	
127-18-4Tetrachloroethene	·		!U :	
79-34-51,1,2,2-Tetrachlo			10 :	
108-88-3Toluene	;		: W :	
108-90-7Chlorobenzene	i		: n7 :	
100-41-4Ethylbenzene	i	50.	; \\ \\ ;	
100-42-5Styrene	;	50. 50.	:	
: 1000-100/Xyrene (total)	:	JŲ.	: :	

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

VIZIVBTB

Matrix: (soil/water) WATER

Lab Sample ID: 3650.5

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2714

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/25/91

Column: (pach/cap) PACh

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	   RT	EST. CONC.	;
! 1 !		!	!	!!
1		'	 	!:
3		`	·	; ;
4.				
5;				!;
6				!;
7		':		!;
8;				! :
9		!		!
10				! <b></b> -!
11.				
:::	i			!!
				<b></b>
15.				' <u>'</u>
16				:
4 <b>7</b>				
18;		:		:
19!				
20				:
21		1	!	
22		!		!
			!	
		!		
		!	!	!
26		!	!	!
	i	i	i	
39		<u>;</u>	;	
30			<u>'</u>	!
		:	:	;
'-		'.	'	'

FORM I VOA-TIC

## VOL TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3652.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: G3156

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100. Date Analyzed: 5/28/91

Dilution Factor: 2.50 Column: (pack/cap) PACk

		CONCENTRA	AU NOITA	VITS:		
CAS NO.	COMPOUND	(ug/L or	ug/ka)	UG/L	C	7
1			:		:	;
1 74-87-3	Chloromethane _		!	25.		;
1 74-83-9	Bromomethane		;	25.		;
1 75-01-4	Vinyl Chloride_		;	25.	١U	1
1 75-00-3	Chloroethane			25.	١U	:
1 75-09-2	Methylene Chlori	.de	;	12.	: U	;
1 67-64-1	Acetone		;	25.	١U	1
75-15-0	Carbon Disulfide	?	;	12.	١U	- 1
: 75-35-4	1,1-Dichloroethe	ene	:	12.	ΙU	;
: 75-34-3	1.1-Dichloroetha	ne	;	12.	١U	;
1 540-59-0	1.2-Dichloroethe	ene (total)	;	380.	;	;
1 67-66-3	Chloroform		!	12.	١U	:
107-06-2	1.2-Dichloroetha	ue	;	12.		1
1 78-93-3	2-Butanone		:	. <del>قان</del> تر	JU R	- 1
1 71-55-6	1,1,1-Trichloros	thane	:	12.	١U	;
: 56-23-5	Carbon Tetrachlo	ride	:	12.	١U	;
108-05-4	Vinyl Acetate		:	25.	:u	;
1 75-27-4	Bromodichloromet	hane	:	12.	; U	;
1 78-87-5	1,2-Dichloroprop	ane	:	12.	ŀυ	1
:10061-01-5	cis-1,3-Dichloro	propene		12.	ŀU	;
1 79-01-6	Trichloroethene		:	300.	1	;
124-48-1	Dibromochloromet	hane	;	12.	١U	;
1 79-00-5	1.1.2-Trichloroe	thane	:	12.	١U	;
1 71-43-2	Benzene		:	12.	: U.J	ţ
110061-02-6	Trans-1.3-Dichlo	ropropene	:	12.	٠U	;
	Bromoform		;	12.	١U	;
108-10-1	4-Methyl-2-Penta	none	:	25.	:U	:
: 591-78-6	2-Hexanone		_	25.	ŀυ	;
127-18-4	Tetrachloroethen	6	;	46.	استخدا	;
1 79-34-5	1,1,2,2-Tetrachl	oroethane	;	1 Z .	:υ	;
108-88-3	Toluene		;	12.	:uJ	;
108-90-7	Chlorobenzene			12.	١٣٧	;
100-41-4	Ethylbenzene		!	12.	ذّ ں :	;
100-42-5	Styrene		:	12.	:07	;
1330-20-7	Xylene(total)		;	12.	:UJ	;
			 !		_	_ ;
		<b></b>				_

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.: 00054

Matrix: (soil/water) WATER Lab Sample ID: 3652.1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: G3156

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec. 100. Date Analyzed: 5/28/91

Column: (pack/cap) PAUK Dilution Factor: 2.50

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

					<del></del> .
; !	CAS NUMBER	: COMPOUND NAME	: RT	EST. CONC.	: : 0 :
; =	=======================================	=======================================	::======	;=========	!====:
•	1	 	!	!	::
		'	!	!	! !
;	3		!		! ;
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	5			;	::
	6.		;		::
1	7		!		:;
	8.		;		;;
	9.				
	10.		!		
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	21!		!!		
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	24		!!	!	:
	25:		;		!
i .	26		;		
1.	27:			!	;
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	70			:	;
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FORM I VOA-TIC

## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

V197V8FS

Lab Name: PACE Contract:

Matrix: (Soil/water) WATER Lab Sample ID: 3651.3

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2715

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec. 100. Date Analyzed: 5/25/91

Column: (pack/cap) PACk Dilution Factor: 10.00

				ION N			
CAS NO.	COMPOUND	(nā/F	or u	ığ/kg)	UG/L	C	מ
!							!
74-87-3	Chloromethane			ì	100.	•	
1 74-83-9	Bromomethane			- 1	100.	. –	:
75-01-4	Vinyl Chloride_				1100.		i
75-00-3	Chloroethane			-;	100.	įυ	:
75-09-2	Methylene Chlori	.de		-	50.	: U	i
67-64-1	Acetone			- 1	100.	i u	1
75-15-0	Carbon Disulfide			-;	50.	Ü	
75-35-4	1,1-Dichloroethe			- ;	50.	ΙÜ	,
75-34-3	1.1-Dichloroetha	ane		- :	50.	ΙÜ	
	1.2-Dichloroethe				1600.	!	
67-66-3	Chloroform			- }	50.	. U	
107-06-0	1.2-Dichloroetha			- 1	50.	ΙÜ	•
78-93-3	2-Butanone			- <u>;</u>	100.	ΙÜ	
71-55-6	1,1,1-Trichloroe	thane		- }	50.	iū	1
56-23-5	Carbon Tetrachlo	ride		- ;	50.	10	;
108-05-4	Vinyl Acetate			- ;	100.	ΙÜ	:
75-27-4	Bromodichloromet	hane		- :	50.	١U	:
1 78-87-5	1,2-Dichloroprop	ane		-	50.	١U	:
110061-01-5	cis-1,3-Dichloro	propene		-;	50.	١U	;
79-01-6	Trichloroethene			- ;	220.	;	;
1 124-48-1	Dibromochloromet	hane		-;	50.	١U	:
1 79-00-5	1,1,2-Trichlorwe	thane		- 	50.	١U	:
1 71-43-2	Benzene			1	50.	Lu:	;
110061-02-6	Trans-1,3-Dichlo	roproper	ne _	<u> </u>	50.	:ប	:
1 75-25-2	Bromoform				50.	:U	;
108-10-1	4-Methyl-2-Penta	none		_ 1	100.	ŀU	;
: 591-78-6	2-Hexanone			_	100.	: 🖰	;
127-18-4	Tetrachloroethen	6		_	25.	: J	1
1 79-34-5	-1,1,2,2-Tetrachl	oroethar	ne	<u> </u>	50.	:ប	:
	Toluene				13.	¦ J	:
108-90-7	-Chlorobenzene			:	50.	:03	;
100-41-4	Ethylbenzene			_	50.	וח:	;
100-42-5	Styrene			_ ;	50.	۲υ١	;
1 1330-20-7	Xylene (total)			_ :	50.	: UJ	;
!				.		_	;

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

. V197V8FS

ETH SMITTLE NU.

Lab Name: PACE . Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3651.3

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2715

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec. 100. Date Analyzed: 5/25/91

Column: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	: COMPOUND NAME	; RT !======	: : EST. CONC.	; α ; ; α ;
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4		!	<u> </u>	!!
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6				·
7				1
8				! ;
9				;;
10				!;
11				11
12			;	! ;
13;		;		:;
14.			,	
15				:
1,*				!;
				i i
19		;		;
20.		;		,;
21.				' <u>'</u>
22.				!
				!!
23				
24			!	1
25		!		!
261		!		1
27:		:		!
70				
70				
20				:
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'			'	'

FORM I VOA-TIC

## 1 A VOLITILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 1 51-20

.ab Name: PACE

Contract:

---001-91

SDG No.:

1atrix: (Soil/water) WATER

Lab Sample ID: 3653.0

Sample wt/vol: 5. (g/mL) ML

lab File ID: G3157

Level: (low/med) LOW

Date Received: 5/18/91

: Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACk

Dilution Factor: 20.00

#### CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

			MITON OF			
CAS NO.	COMPOUND	(mä\r oi	. nā∖ků)	UG/L	Ω	
						;
74-87-3	Chloromethane		;	200.	; U	;
: 74-83-9	Bromomethane	-		200.	٠u	;
75-01-4	Vinyl Chloride		;	200.	: U	;
+ 75-00-3	Chloroethane		<b>;</b>	goo.	١U	;
1 75-09-2	Methylene Chlori	.de	!	100.	ΙU	;
67-64-1	Acetone		;	200.	HU	;
75-15-0	Carbon Disulfide	<b>)</b>	;	joo.	! U_	:
1 75-35-4	1.1-Dichloroethe	ne	;	100.	:U	į
1 75-34-3	1.1-Dichloroetha	ne	!	100.	:U	;
1 540-59-0	1.2-Dichloroethe	ene (total	1 }	100.	: U	;
67-66-3	Chloroform		;	100.	: U	;
1 107-06-2	1.2-Dichloroetha	ne	;	100.	: []	:
1 78-93-3	2-Butanone		1	سيبه وتنسير	H R	!
; 71-55-6	1.1.1-Trichloroe	thane	!	100.	:U '	;
: 56-23-5	Carbon Tetrachlo	ride	!	100.	; U	;
108-05-4	Vinyl Acetate		;	200.	١U	;
1 75-27-4	Bromodichloromet	hane	!	100.	١U	:
1 78-87-5	1,2-Dichloroprop	ane	;	100.	; IJ	;
110061-01-5	cis-1,3-Dichloro	propene _	!	100.	ιυ	;
79-01-6	Trichloroethene		;	100.	: U	;
124-48-1	Dibromochloromet	hane	1	100.	: U	;
79-00-5	1.1,2-Trichloroe	thane	'	100.	ŀυ.	-
	Benzene		!	100.	ן ט י	:
110061-02-6	Trans-1,3-Dichlo	ropropene	!	100.	: U	;
75-25-2	Bromoform		;	100.	; U	i
108-10-1	4-Methyl-2-Penta	none	;	200.	iυ	;
591-78-6	2-Hevanone		!	200.	: U	1
127-18-4	Tetrachloroethen	e	!	3300.	مبيله	;
79-34-5	1.1.2.2-Tetrachl	proethane	!	100.	: U	-
	Toluene		:	100.	:UJ	1
108-90-7	Chlorobenzene		!	100.	:υ λ	;
100-41-4	Ethylbenzene			100.	¦U,	;
100-42-5	Styrene		;	100.	:n ý	1
1330-20-7	Xylene(total)	- ·	;	100.	: n 7	;
				. <b></b>		_ ;

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: 31-20

00192

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3A53.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3157

Level: (low/med) LOW

Date Received: 5'18/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pack/cap) PACh

Number TICs found: 0

Dilution Factor: 20.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	1 11	: EST. CONC.	: : O !=====
1		:		!
2		!		!
3   4.		!		!
5		!		!
6				!
7				!!
8: 9:				!!
10		'		!
11!		'		! ;
12				!!
13				
16;				
17.				
20;				
21.		!		!
35		;		;
		'		;
25				
		!	!	:
70				;
				'
20		,		
!		:	:	:

FORM I VOA-TIC

### 1 A VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. ................. : S1-20TB |\_\_\_\_|

Lab Name: PACE

Contract:

SDG No.: CO196A

Matrix: (soil/water) WATER

Lab Sample ID: 3655.6

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3158

Level: (low/med) LOW

% Moisture: not dec.100.

Date Received: 5/18/91 Date Analyzed: 5/08/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

## CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

CAS NO.	COMPOUND	CUIDAL OF HIGHE		O	
	<b>-</b>	:		!	!
74-87-3	Chloromethane		10.		:
74-83-9	Bromomethane		10.		;
75-01-4	Vinyl Chloride_		10.		
75-00-3	Chloroethane		10.	_	}
1 75-09-2	Methylene Chlor:	lde;	5.	-	:
1 67-64-1	Acetone		to.	: U	;
75-15-0	Carbon Disulfide	;	5.	! LJ	!
1 75-35-4	1.1-Dichloroethe	ene!	5.	ŀυ	;
	1.1-Dichloroetha		5.	: U	:
540-59-0	1.2-Dichloroethe	ene (total);	5.	; IJ	!
1 67-66-3	Chloroform		5.	; U	;
1 107-06-2	1.2-Dichloroetha	ane ;	5.	ΙU ,	;
1 78-93-3	I-Butanone		سببد	INR	;
71-55-6	1.1.1-Trichloroe	thane :	5.	:U	;
56-23-5	Carbon Tetrachlo	ride	5.	: U	1
108-05-4	Vinyl Acetate	!	10.	111	:
1 75-27-4	Bromodichloromet	hane	5.	÷υ	;
1 78-87-5	i,2-Dichloroprop	ane	5.	:U	1
110061-01-5	cis-1.3-Dichloro	propene :	5.	: U	;
1 79-01-6	Trichloroethene	!	5.	: U	1
124-48-1	Dibromochloromet	hane:	5.	: U	;
1 79-00-5	1,1,2-Trichloroe	thane :	5.	ΙU	:
1 71-43-2			5.	: U <b>J</b>	:
	Trans-1.3-Dichlo	ropropene ;	5.	:U	:
: 75-25-2	Bromoform	;	٩.	! U	;
108-10-1	4-Methyl-2-Penta	none	10.	! U	;
591-78-6	2-Hexanone		10.	: U	;
127-18-4	Tetrachloroethen	e ;	5.	: U	;
1 79-34-5	1.1.2,2-Tetrachl	oroethane :	5.	: U	:
108-88-3	Toluene	;	5.	: UJ	;
108-90-7	Chlorobenzene		5.	LU1	1
100-41-4	Ethylbenzene	!	5.	رں:	;
100-42-5	Styrene		5.	וֹט וֹ	:
1330-20-7	Xvlene(total)		5.	١Ū٦	;
·				;	:
			<b></b>		-

# VOLATILE ORGANICS ANALYSIS DATA SHFET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

51-FOTB

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: 00196 B

Matrix: (Soil/water) WATER Lab Sample ID: 3655.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3158

% Moisture: not dec.100.
Date Analyzed: 5/28/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

		,			
	CAS NUMBER	COMPOUND NAME	, : RT !=======	EST. CONC.	. Ü :
i			; ======	, ====================================	;====;
•	1	<u> </u>	,		<u> </u>
	<u> </u>				,
	ر	<u> </u>	•		! '
•	4 5.	1		<b>'</b>	; ;
	5				; ,
:	7.	·	' ' '		:
•	9.	!			
	9.				;
	10.				! :
	11.				;
	12.	1	;		!!
;	13	1	!		; '
•	14				:
		!			
٠	16	!!			
;					
			!		
;					
i	20		!		
	21	 			
,	23.	'i	;	i	;
1	7,1	i	;	'	!
		i 	:		'
,	7/7	·	;		;
	27		;	;	;
-	28				
	19.	[ <del></del> ]			'
:	20				
					:

FORM I VOA-TIC

EPA SAMPLE NO.

54-18

Lab Name: PACE

Contract:

'--- 0.0 2-0 0-----

Matrik: (soil/water) WATER

Lab Sample ID: 3660.2

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3187

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND		ok mā/kā) ikwiion o		Ω	
						:
1 74-87-3	Chloromethane		!	100.	_	!
74-83-9	Bromomethane			100.		;
75-01-4	Vinyl Chloride			100.		:
1 75-00-3	Chloroethane		!	100.	: U	- 1
1 75-09-2	Methylene Chlori	de	- 1	50.	¦ U	;
67-64-1	Acetone		;	100.	; U	:
; /5-15-0	Carbon Disultide		;	50.	: U	ł
1 75-35-4	1,1-Dichloroethe	ne	;	50.	; U	:
1 75-34-3	1.1-Dichloroetha	ne	:	50.	11)	;
: 540-59-0	1,2-Dichloroethe	ne (tota	1);	50.	: U	;
1 67-66-3	Chloroform		!	50.	: U	;
1 107-06-2	1.2-Dichloroetha	ne	;	50.	10 0	;
1 78-93-3	2-Butanone		;	100	HC	<b>-</b> :
; 71-55-6	1.1.1-Trichloroe	thane		50.	:13	;
1 56-03-5	Carbon Tetrachlor	ride	;	50.	: U	;
108-05-4	Vinyl Acetate			100.	:11	;
1 75-27-4	Bromodichloromet	rane	;	50.	١U	:
1 78-87-5	1.2-Dichloropropa	ane	!	50.	(1)	;
:10061-01-5	cis-1.3-Dichlorop	propene	1	50.	: U	;
79-01-6	Trichloroethene			50.	: U	!
124-48-1	Dibromochlorometh	nane		50.	١U	;
: 79-00-5	1.1.2-Trichloroet	thane	:	50.	: U	1
71-43-2	Benzene		;	50.	: W	;
10061-02-6	Trans-1.3-Dichlor	ropropen	e !	50.	ΙU	;
75-25-2	Bromoform		:	50.	:U	1
108-10-1	4-Methvl-2-Pentar	ione	;	100.	: U	;
591-78 <b>-</b> 6	2-Hevanone		!	100.	: U	:
127-18-4	Tetrachloroethene	·		1600.	1	;
79-34 <b>-</b> 5	1,1.2.2-Tetrachlo	roethan	e ;	50.	110	!
108-88-3	Toluene		;	50.	: u J	;
108-90-7	Chlorobenzene		;	50.	:uJ	;
100-41-4	Ethylbenzene		;	50.	: U )	;
100-42-5	Stvrene		;	50.	נט:	1
1330-20-7	Xylene(total)		:	50.	;uJ	;
			!		-	_ :

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: FACE Contract:

54-18

SDG No.: 00201

Matri .: (Soil/Water) WATER

Lab Sample ID: 3660.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3187

level: Clow/med: LOW

Date Received: 5/18/91

" Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 ma/L or ug/kg) UG/L

				<del>,</del> ,
CAS NUMBER	COMPOUND NAME	, RT	EST. CONC.	
=======================================			:=====================================	: ====:
1			<b>!</b>	
·		,	` <b></b>	
3.				
4				
5				
6				:
7				:
8.				
9.				
10.				
				:
12		;		:
13;				
14;				
15				
16			1	
17				;
10		,		!
19;		;	;	;
20		:	;	
21			1	
22		:	!	
23.		;	!	
		;	j	
% <b>⊑</b> *	·	;	;	
26			;	
27			1	
28				
30				
20		;		

FORM I VOA-TIC

## VOI TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE ' V131V<del>MS</del>

Lab Name: PACE

Contract:

Matrix: (soil/water) WATER

Lab Sample ID: 3648.3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2768166

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec. 100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

74-87-3Chloromethane	CAS NO.	COMPOUND	(ug/L or u			Q	
74-83-9Bromomethane							*
74-83-9Bromomethane	. 74 07 0	Ö11		į	4.00	<b>;</b>	;
75-01-4	/4-8/-3	Unloromethane _		- ;			i
75-00-3 Chloroethane	74-83-9	Bromomethane		- <u>:</u>			i
75-09-2Methylene Chloride	/5-01-4	Vinyl Chloride_		<u>;</u>		•	i
67-64-1	75-00-3	Chloroethane		- <del>!</del>		. –	
75-15-0	75-09-2	Methylene Chlori	.de	- <b>:</b>			
75-35-41,1-Dichloroethene   270   144   211   270   274   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   275   2	67-64-1	Acetone		- <del>!</del>			i
75-34-31,1-Dichloroethane	75-15-0	Carbon Disulfide		_ <u> </u>		10	1 213191
540-59-01,2-Dichloroethene (total)   920.     67-66-3	75-35-4	1.1-Dichloroethe	ne	_			A Ilai.
67-66-3Chloroform	75-34-3	1,1-Dichloroetha	ane	_		ιυ	1
107-06-21,2-Dichloroethane						;	ŀ
78-93-32-Butanone	: 67-66-3	Chloroform		_		. –	;
71-55-61,1,1-Trichloroethane   50.   U   108-05-4Vinyl Acetate   100.   U   75-27-4Bromodichloromethane   50.   U   78-87-51,2-Dichloropropane   50.   U   10061-01-5	1 107-06-2	1,2-Dichloroetha	ine	_	50.		i
71-55-61,1,1-Trichloroethane   50.   U   108-05-4Vinyl Acetate   100.   U   75-27-4Bromodichloromethane   50.   U   78-87-51,2-Dichloropropane   50.   U   10061-01-5	1 78-93-3	2-Butanone		_ !	100.		;
108-05-4Vinyl Acetate	1 71-55-6	1,1,1-Trichloros	thane	<u> </u>	50.		;
75-27-4Bromodichloromethane	56-23-5	Carbon Tetrachlo	ride	_	50.	١U	:
75-27-4Bromodichloromethane	108-05-4	Vinyl Acetate		_	100.	: U	1
78-87-51,2-Dichloropropane   50.   U   79-01-6cis-1,3-Dichloropropene   50.   U   79-01-6Trichloroethene   50.   U   79-00-51,1,2-Trichloroethane   50.   U   79-00-51,1,2-Trichloroethane   50.   U   71-43-2Benzene   440   3 th	1 75-27-4	Bromodichloromet	hane	_	50.	! IJ	;
79-01-6Trichloroethene   124-48-1Dibromochloromethane   50.   U   79-00-51,1,2-Trichloroethane   50.   U   71-43-2Benzene   440   J L J J J J J J J J J J J J J J J J J	1 78-87-5	1,2-Dichloroprop	ane	_ :	50.	:U	1
124-48-1Dibromochloromethane	(10061-01-5	cis-1,3-Dichloro	propene	_ {	50.	10	12A1
124-48-1Dibromochloromethane	79-01-6	Trichloroethene		_	૧૦૦	: {K}	יוקא
75-25-2Bromoform	124-48-1	Dibromochloromet	hane	_	50.	: U	:
75-25-2Bromoform	79-00-5	1,1,2-Trichloroe	thane	_ !	50.	l U	1-1-191
75-25-2Bromoform	1 71-43-2	Benzene		_	440	13 EK	11/2/11/0
108-10-14-Methyl-2-Pentanone	110061-02-6	Trans-1.3-Dichlo	ropropene	<u> </u>	50.	: U	1
108-10-14-Methyl-2-Pentanone	1 75-25-2	Bromoform		<u></u>	50.	١U	;
591-78-62-Hexanone	1 108-10-1	4-Methyl-2-Penta	none	_ {	100.	; U	:
127-18-4Tetrachloroethene	591-78-6	2-Hexanone		1	100.	:U2	:
79-34-51,1,2,2-Tetrachloroethane 50.   U   108-88-3Toluene	1 127-18-4	Tetrachloroethen	e	1	280.	1 R	;
108-88-3Toluene 480   J L/1/3 91   108-90-7Chlorobenzene					50.	١U	: ,
100-41-4Ethylbenzene  50.  U					480	11 11	1713191
100-41-4Ethylbenzene  50.  U	108-90-7	Chlorobenzene		}	, -	1) "	4 11-1
100-42-5Styrene 50.  U	100-41-4	Ethylbenzene		;		۱ŭ۵	1
1330-20-7Xylene (total) 50.  UJ	1 100-42-5	Styrene		1	50.		:
	1330-20-7	Xylene (total)		:	50.	IUJ	1
	<b>!</b>					.	_

EPA SAMPLE NO.

*PFSMSD* V131V<del>H3D</del>

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.: (راهدل)

Matrix: (soil/water) WATER Lab Sample ID: 3648.3

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2769

UU170
Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec. 100. Date Analyzed: 5/29/91

Column: (pac)/cap/ PACK Dilution Factor: 10.00

CAS NO.	СОМРОИИР	CONCENT				۵	
74-87-3	Chloromethane		·	 !	100.	 : :บ	
! 74-97-9	-Bromomethane		· ;		100.	; U	,
75-01-4	Vinyl Chloride		·:	ı	250.	!	!
75-00-3	-Chloroethane				100.	: u	:
: 75-09-0	-Methylene Chloric	1e	:		50.	U	:
67-64-1	-Acetone		1		110.	18	
1 75-15-0	-Carbon Disulfide		;		50.	۱Ū.	12191
1 75-35-4	-1,1-Dichloroether	ne	:		310	LEA	اردار
1 75-34-3	-1,1-Dichloroethar	e	;		50.	ΙU	1
1 540-59-0	-1,2-Dichloroether	ne (tota	1):		890.	1	1
1 67-66-3	-Chloroform		!		50.	: U	!
107-06-2	-1.2-Dichloroethar	ne	;		50.	:υ	;
: 78-93-3	-2-Butanone				1500	; P_	!
1 71-55-6	-1,1,1-Trichloroet	hane	;		<b>50.</b>	; U	;
56-23-5	-Carbon Tetrachlor	ıde			50.	: U	;
108-05-4	-Vinyl Acetate				100.	: U	1
75-27-4	-Bromodichlorometh	ane			50.	: U	;
78-87-5	-1,2-Dichloropropa	ne			50.	: U	1
10061-01-5	-cis-1,3-Dichlorop	ropene .			50.	: LENT	2191
79-01-6	-Trichloroethene _		!		800		71
124-48-1	-Dibromochlorometh	ane	!		50.	: U	
79-00-5	-1,1,2-Trichloroet				50.	ij w	7/3/91
1 71-43-2	-Benzene		:		480		1
1 75 05 0	-Trans-1,3-Dichlor				50.	!U	;
1 75-25-2	-Bromoform		!		50.	10	<b>;</b>
591-79-6	-4-Methyl-2-Pentan	one			100.	: U	;
1 127-18-1	-2-Hexanone -Tetrachloroethene		:		100.	:U e	i
79-21-5	- letrachloroethene		:		- <del>5</del> 4.	: <i>F</i>	i ,
1 100-00-3	-1,1,2,2-Tetrachlo	roethane	*:		50. Soc	ייט און אינער אלי ארייט און און	i 
1 100-00-7	-Toluene -Chlorobenzene		:			13 6437	13/4/
100-11-1	-Chlorobenzene		:		450	:07 .7 _	)' 
! 100-47-5	Ethylbenzene Styrene		;		50. 50.	(U)	) 
! 1330-20-7	-Xylene (total)		;		50.	: לט:	! !
!	Ayrene (Cotar,		;		٠٠٠.	, ,	
'			' -		· <b></b>	- ' '	



## DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/17/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Foaming occurred during the analysis of all samples except the field blanks and trip blank. The foaming was probably responsible for the very poor results for the matrix spike and matrix spike duplicate samples. Sample results should be used with caution.

Cooler temperature upon receipt of samples by the laboratory was  $5^{\circ}\mathrm{C}$ .

Samples for this sample delivery group were submitted from both the W.R. Grace and UniFirst treatment systems. Only one set of QC samples was run for this day's samples. Samples S6-20DUP, S6-20MS, and S6-20MSD were not analyzed.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 17, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-20FB	3656	05/17/91
S5-15	3661	05/17/91
S6-20	3662	05/17/91
S6-20TB	3664	05/17/91
V140V8FS	3645	05/17/91
V140V8FD	3646	05/17/91
V140V8FB	3647	05/17/91

Samples S2-18 and S3-18 were also submitted with the above samples for Method 524.2 analyses. Because of the high levels of tetrachloroethene in S2-18 and S3-18, these samples were analyzed pursuant to CLP methodology for volatile organic compounds.



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

#### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

#### A. Initial

Initial calibration criteria were met on 5/23/91.

#### B. Continuing

Continuing calibration criteria were met on 5/28/91 (11:06) with the exception of the % difference for methylene chloride (actual 31.12; criteria 25) and 1,1,2,2-tetrachloroethane (actual 25.37; criteria 25). Data were not affected. The peak area for 1,4-difluorobenzene, an internal standard, was manually integrated. The result in Sample S5-15 for 1,1,1-trichloroethane, which is quantitated using 1,4-difluorobenzene, was qualified as estimated.

Continuing calibration criteria were met on 5/28/91 (21:35) with the exception of the % difference for carbon tetrachloride (actual 25.57; criteria 25). Data were not qualified. Areas were manually integrated for bromochloromethane and 1,4-difluorobenzene, which are internal standards. Data were not affected.

Continuing calibration criteria were met on 5/29/91.

#### IV. Blanks

The trip blank, field blanks, and method blanks were clean.



#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V8FS. Data presented on the Form III in the data package was for the wrong sample. Percent recoveries and relative percent differences were calculated by the data validator. Percent recoveries for trichloroethene, 1,1-dichloroethene, benzene, and toluene were below QC criteria in the MS and MSD. The compound 1,1-dichloroethene was completely lost in the MSD analysis. The relative percent difference for 1,1-dichloroethene was well above QC criteria (actual 200; criteria 24). Although no positive data were affected, the detection limit for 1,1-dichloroethene was rejected in Samples V140V8FS and V140V8FD. These poor results for the MS and MSD were probably due to foaming of samples during analyses.

## VII. Field Duplicates

Samples V140V8FS and V140V8FD were subitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:



Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The result reported for 1,1,1-trichloroethane in Sample S5- (28 ug/L) was beyond the calibration range of the instrument (25 ug/L). This result met precision and accuracy criteria and was acceptable as reported.

The result for methylene chloride in Sample S5-15 was below the PQL study-determined MDL. This result was reported as "ND."

All other results and detection limits were acceptable with regard to the supporting data.

## XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.



## XII. System Performance

System performance was acceptable.

## XIII. Overall Assessment of Data for a Case

Detection limits for aromatic compounds were estimated in all samples. The detection limit for 1,1-dichloroethene was rejected in Samples V140V8FS and V140V8FD.

Methylene chloride was corrected to "ND" in Sample S5-15.

UNIFIRST/ENSR	PACE Project N	Number:	810518501
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0036645 05/17/91 05/18/91 <u>\$6-20 TB</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L	0.5	ND
	ug/L	0.5	ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L	0.5	ND
	ug/L	0.5	ND UJ E/9 1
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L	0.5	ND
	ug/L	0.5	ND
	ug/L	0.5	ND
	ug/L	0.5	ND (J)
	ug/L	0.5	ND )
Ethyl benzene	ug/L	0.5	ND L
Xylene, total	ug/L	0.5	

Method Detection Limit Not detected at or above the MDL. MDL

ND

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL_	95 0036459 05/17/91 05/18/91 <u>V140 V8 FS</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND AND AND ND ND ND ND ND ND ND ND ND ND ND ND N
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	רא מא מא מא מא מא
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

Method Detection Limit
Not detected at or above the MDL. MDL ND

W. R. GRACE	PACE Proj	ect Number:	810518500
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u> Unit</u>	s <u>MDL</u>	95 0036467 05/17/91 05/18/91 <u>V140 V8 FD</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIF Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	IED ug/L ug/L ug/L ug/L ug/L	0.5 0.5 <del>0.5</del> 0.5	ND ND ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND ND ND ND ND ND WJ
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND ND ND ND WJ ND
Ethyl benzene Xylene, total	ug/L ug/L		ND

MDL ND Method Detection Limit Not detected at or above the MDL.

A. R. GRACE	PACE	Project	Number:	810518500	00031
PACE Sample Number: Date Collected: Date Received: Parameter		<u>Units</u>	MDL	95 0036475 05/17/91 05/18/91 <u>V140 V8 FB</u>	
ORGANIC ANALYSIS					
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	1	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene		ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	1 <sub>4</sub>  41
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene		ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	D WD WD DN DN DN DN DN DN DN DN DN DN DN DN DN	υι
Ethyl benzene Xylene, total		ug/L ug/L	0.5 0.5	ND	

MDL ND

Method Detection Limit Not detected at or above the MDL.

UNIFIRST/ENSR	PACE Project N	810518501	
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	_MDL_	95 0036564 05/17/91 05/18/91 S1-20 FB
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND W
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND NO

MDL

Method Detection Limit Not detected at or above the MDL. ND

UNIFIRST/ENSR	PACE Project Number	·: 810518501 00037
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u> <u>MDL</u>	95 0036610 05/17/91 05/18/91 . S5-15
ORGANIC ANALYSIS		
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND ND 1.6 2.7 ND MD MD MD MD MD MD MD MD MD M
trans-1,2-Dichloroethene	ug/L 0.5	ND AVI
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND ND ND 27-8 26 J ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	DN DN ON DN CN DN
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND ND ND ND W) ND )
Ethyl benzene Xylene, total	ug/L 0.5 ug/L 0.5	ND L

MDL Method Detection Limit
ND Not detected at or above the MDL.

UNIFIRST/ENSR	PACE Project Number:	810518501
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u> MDL	95 0036629 05/17/91 05/18/91 S6-20
ORGANIC ANALYSIS		
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride l,l-Dichloroethene l,l-Dichloroethane trans-1,2-Dichloroethene	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND MY SEXTIGIAI
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND ND ND ND (L) ND (
Ethyl benzene Xylene, total	ug/L 0.5 ug/L 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

UNIFIRST/ENSR	PACE Project Number:	810518501
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u> <u>MDL</u>	95 0036645 05/17/91 05/18/91 <u>S6-20 TB</u>
ORGANIC ANALYSIS		
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND UJ ELA 1/8/9/
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5 ug/L 0.5	ND ND ND ND (L) ND (D
Ethyl benzene Xylene, total	ug/L 0.5 ug/L 0.5	ND L

MDL Method Detection Limit
ND Not detected at or above the MDL.



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

AND

AREAL SAMPLING

INORGANIC ANALYSES DATA

Samples Collected 5/17/91-5/30/91

Chemical Analyses Performed By
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### **EXECUTIVE SUMMARY**

All wet chemistry data is acceptable as modified.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. Various qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without Validator qualified results are annotated with the reservations. following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either sample quantitation limit or sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Inorganic Data Validation

for

### Environmental Project Control, Inc.

## Samples Collected 5/17/91-5/30/91

## Case Narrative

This group contained 64 water samples. Samples S1-23, S1-23DUP, S1-23FB, S6-23, S1-31, S1-31DUP, S1-31FB, and S6-31 were analyzed for total alkalinity, chloride, fluoride, nitrite/nitrate, total phosphorus, dissolved silica, total suspended solids, total dissolved solids, sulfate, cyanide, hexavalent chromium, and total organic carbon. Samples S82, S81S, UG12, FDUG12, FBUG12, and UG16 were analyzed for chloride, nitrite/nitrate, and total organic carbon. All other samples were analyzed for total suspended solids only.

Samples validated in this report are noted below:

Client ID	Lab ID	Date of Collection
S1-20	36530	05/17/91
S1-20FB	36564	05/17/91
S1-20DUP	36548	05/17/91
S1A-18	36572	05/17/91
S1-21	36653	05/18/91
S1-21FB	36688	05/18/91
S1-21DUP	36661	05/18/91
S1A-19	36696	05/18/91
S1-22	37250	05/19/91
S1-22FB	37285	05/19/91
S1-22	37269	05/19/91
S1A-21	37412	05/20/91
S1-23	37528/37560/3760	9 05/20/91
S1-23DUP	37536/37579/3761	7 05/20/91
S1-23FB	37544/37587/3762	5 05/20/91
S6-23	37552/37595/3763	3 05/20/91
S1-24FB	37820	05/21/91
S1-24	37790	05/21/91
S1-24DUP	37803	05/21/91
S1A-22	37838	05/21/91
S1-25	38346	05/22/91
S1-25FB	38370	05/22/91
S1-25DUP	38354	05/22/91
S1A-23	38389	05/22/91
S1A-24	38826	05/23/91
S1-26	38788	05/23/91



S1-26FB	38818	05/23/91
S1-26DUP	38796	05/23/91
S1-27	38923	05/24/91
S1-27DUP	38931	05/24/91
S1-27FB	38958	05/24/91
S1A-25	38966	05/24/91
S1-28	39040	05/25/91
S1-28DUP	39059	05/25/91
S1-28FB	39075	05/25/91
S1A-26	39083	05/25/91
S1-29	39164	05/26/91
S1-29FB	39199	05/26/91
S1-29DUP	39172	05/26/91
S1A-27	39202	05/26/91
S1-30	39288	05/27/91
S1-30FB	39318	05/27/91
S1-30DUP	39296	05/27/91
S1A-28	39326	05/27/91
S1A~29	39466	05/23/91
S1-31	39547/39601/39679	05/23/91
S1-31DUP	39555/39610/39687	05/23/91
S1-31FB	39563/39628/39695	05/23/91
S6-31	39571/39636/39709	05/23/91
S1-32	40120	05/29/91
S1-32DUP	40138	05/29/91
S1-32FB	40154	05/29/91
S1A-30	40162	05/29/91
S1-33	40642	05/30/91
S1-33DUP	40650	05/30/91
S1-33FB	40677	05/30/91
S1A-31	40685	05/30/91
S82	40944	05/29/91
S81S	40952	05/29/91
UG12	40960	05/29/91
FDUG12	40979	05/29/91
FBUG12	40995	05/29/91
UG16	41002	05/29/91

The areas reviewed during validation are listed below.



# Wet Chemistry Data Validation

- I. Holding Times
- II. Calibration
- III. Blanks
- IV. Matrix Spike Sample Analysis
- V. Duplicate Sample Analysis
- VI. Sample Result Verification
- VII. Other QC
- VIII. Overall Assessment



#### Data Validation

## I. Holding Times

All wet chemistry analyses were conducted within acceptable holding times.

#### II. Calibration

The correlation coefficient for the calibration curve for sulfate was 0.9878. All positive sulfate results and detection limits were qualified as estimated.

#### III. Blanks

Field blank results are summarized below.

Sample (FB)	<u>Parameter</u>	Result (ppm)
S1-23	Nitrate/Nitrite TOC Alkalinity	0.028 0.77 2
S1-31	Nitrate/Nitrite TOC Alkalinity	0.3 0.52 1
UG12	Nitrate/Nitrite TOC	0.14 0.39

Values at or below the action level (five times the highest blank value) were qualified with a "U" at the reported value.

## IV. Matrix Spike Sample Analysis

Matrix spike analyses were satisfactory except as noted below (Criteria 75%-125%).

Spiked Sample	<u>Parameter</u>	Recovery (%)
S1-23	Nitrate/Nitrite Chloride	130 72.5
UG12	Nitrate/Nitrite	10



Positive nitrate/nitrite results for samples associated with S1-23 and UG12 were estimated (J). Detection limits for samples associated with UG12 were rejected (R). Positive chloride results and detection limits associated with S1-23 were estimated (J and UJ).

### V. Duplicate Sample Analysis

Duplicate results were acceptable except as noted below (Criteria RPD  $\pm$  20%).

Duplicate Sample	<u>Parameter</u>	RPD (%)
S1-23	Nitrate/Nitrite TOC	21 29

Positive nitrate/nitrite and TOC results for samples associated with S1-23 were estimated (J).

## VI. Sample Result Verification

Form I's were correct.

#### VII. Overall Assessment

All data were acceptable with the changes noted above.

UNIFIRST/ENSR PACE Project Number: 810518501

00079

 PACE Sample Number:
 95 0036530

 Date Collected:
 05/17/91

 Date Received:
 05/18/91

 Parameter
 Units
 MDL
 S1-20

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

 PACE Sample Number:
 95 0036564

 Date Collected:
 05/17/91

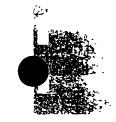
 Date Received:
 05/18/91

 Parameter
 Units
 MDL
 S1-20 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit



UNIFIRST/ENSR

PACE Project Number: 810518501

PACE Sample Number: Date Collected: Date Received:

95 0036548 05/17/91

05/18/91

<u>Parameter</u>

MDL S1-20 Dup <u>Units</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ND

MDL

Method Detection Limit

UNIFIRST/ENSR

PACE Project Number: 810518501

PACE Sample Number: Date Collected:

95 0036572 05/17/91

Date Received:

05/18/91

<u>Parameter</u>

<u>Units</u>

MDL S1A-18

ND

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

1 mg/L

MDL

Method Detection Limit

UNIFIRST/ENSR	PACE Project	Number	: 810518502
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0036653 05/18/91 05/18/91 51-21
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL_	95 0036688 05/18/91 05/18/91 <u>\$1-21 FB</u>
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND

Method Detection Limit Not detected at or above the MDL.

MDL ND 00082

UNIFIRST/ENSR PACE Project Number: 810518502 00083

 PACE Sample Number:
 95 0036661

 Date Collected:
 05/18/91

 Date Received:
 05/18/91

 Parameter
 Units
 MDL
 \$1-21 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

PACE Project Number: 810518502

PACE Sample Number: Date Collected:

95 0036696 05/18/91

00084

Date Received:

05/18/91

<u>Parameter</u>

<u>Units</u>

MDL\_ S1A-19

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ND

MDL

Method Detection Limit

PACE Project Number: 810519501

00085

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0037250 05/19/91 05/19/91 <u>\$1-22</u>
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL	95 0037285 05/19/91 05/19/91 <u>\$1-22 FB</u>
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND

MDL

Method Detection Limit

PACE Project Number: 810519501

00086

PACE Sample Number:

95 0037269

Date Collected:

05/19/91 05/19/91

Date Received: Parameter

<u>Units</u>

MDL S1-22 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1 ND

MDL

Method Detection Limit

ND

PACE Project Number: 810521500

00087

PACE Sample Number:

95 0037412 05/20/91

Date Collected:

Date Received:

05/21/91

<u>Parameter</u>

<u>Units</u>

MDL S1A-21

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

} ND

MDL

Method Detection Limit

ND

PACE Project Number: 810521500

00088

PACE Sample Number:

95 0037528 05/20/91

Date Collected:

05/20/91

1.2 U

Date Received: Parameter

<u>Units</u> <u>MDL</u> <u>S1-23</u>

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Total Organic Carbon

Nitrogen, Nitrate plus Nitrite Phosphorus, Total 0.20 3.0 ゴ 0.3 ND

0.10

mg/L

mg/L

mg/L

1000 A)Q

MDL

Method Detection Limit

PACE Project Number: 810521500

00089

PACE Sample Number: Date Collected:

95 0037536 05/20/91

Date Received:

05/21/91

1.6 U

<u>Parameter</u>

<u>Units</u> MDL S1-23 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Total Organic Carbon

Nitrogen, Nitrate plus Nitrite Phosphorus, Total

3.7 J mg/L 0.20 mg/L 0.3 ND 0.10

mg/L

MDL

Method Detection Limit

PACE Project Number: 810521500 0 0 0 9 0

 PACE Sample Number:
 95 0037544

 Date Collected:
 05/20/91

 Date Received:
 05/21/91

 Parameter
 Units
 MDL
 S1-23 FB

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Nitrogen, Nitrate plus Nitrite mg/L 0.02 0.028 
Phosphorus, Total mg/L 0.3 ND 
Total Organic Carbon mg/L 0.10 .77

MDL Method Detection Limit
ND Not detected at or above the MDL.

PACE Project Number: 8105205009 1

 PACE Sample Number:
 95 0037552

 Date Collected:
 05/20/91

 Date Received:
 05/21/91

 Parameter
 Units
 MDL
 \$6-23

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Nitrogen, Nitrate plus Nitrite mg/L 0.20 3.9 \( \text{Total Phosphorus}, Total \)
Total Organic Carbon mg/L 0.10 .72 \( \text{U} \)

7/17/91

MDL Method Detection Limit

UNIFIRST/ENSR	PACE Proje	ect Number	r: 810521500 00092
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	(	95 0037560 05/20/91 05/21/91 51-23
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Cyanide, Total, Aqueous Fluoride, Total Silica, dissolved Solids, Total Dissolved	mg/L mg/L ug/L mg/L mg/L mg/L	10 N 0.1 N 0.2 I	72 249 J P
Solids, Total Suspended Sulfate	mg/L mg/L		ID 32.6 丁

MDL

Method Detection Limit Not detected at or above the MDL. ND

LIN	T	<b>F</b> 1	D	CI	Г/	FΝ	SR	

UNIFIRST/ENSR	PACE Proj	ect Num	ber: 810521500	00093
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0037579 05/20/91 05/21/91 <u>S1-23 Dup</u>	00093
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Cyanide, Total, Aqueous Fluoride, Total Silica, dissolved Solids, Total Dissolved	mg/L mg/L ug/L mg/L mg/L mg/L	i 10 10 0.1 0.2	72 238 \( \) ND \( \) ND \( \) 11.5 \( \)	<sub>4</sub> 191
Solids, Total Suspended Sulfate	mg/L mg/L	1 5	ND 34.7 ゴ	

MDL Method Detection Limit

		•	-	•		~	_		_		~	<b>n</b>
	N				$\mathbf{v}$	•		,		N	•	v
u	11		•	٠	п	J		,	_	H	J	R

PACE Project Number: 810521500

00094

 PACE Sample Number:
 95 0037587

 Date Collected:
 05/20/91

 Date Received:
 05/21/91

 Parameter
 Units
 MDL
 \$1-23 FB

# INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS			
Alkalinity, Total	mq/L	1	2
Chloride	mg/L	1	NDUJ
Cyanide, Total, Aqueous	uq/L	10	ND
Fluoride, Total	mg/L	0.1	ND
Silica, dissolved	mg/L	0.2	ND
Solids, Total Dissolved	mg/L	1	ND
Solids, Total Suspended	mg/L	1	ND
Sulfate	mg/L	5	NDUT

MDL Method Detection Limit

I ILLY		ACT.	'ENSR
I IN I	- 11	U \ I I	
UIII	1 1	1211	LHJK

PACE Project Number: 810521500

00095

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0037595 05/20/91 05/21/91 S6-23
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Cyanide, Total, Aqueous Fluoride, Total Silica, dissolved Solids, Total Dissolved	mg/L mg/L ug/L mg/L mg/L mg/L	1 10 10 0.1 0.2	71 249 U ND ND 11 718
Solids, Total Suspended Sulfate	mg/L mg/L	1 5	ND 31.3 丁

MDL

Method Detection Limit Not detected at or above the MDL. ND

UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number: Date Collected:

95 0037609 05/20/91

Date Received:

05/21/91

<u>Parameter</u>

<u>Units</u> MDL S1-23

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

mg/L 0.01 ND

MDL

Method Detection Limit

UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number: Date Collected: Date Received: 95 0037617 05/20/91 05/21/91

Parameter

Units MDL S1-23 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Chromium, Hexavalent

mg/L 0.01 ND

MDL

Method Detection Limit

ND

UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number:

95 0037625 05/20/91

Date Collected:

Date Received: <u>Parameter</u>

05/21/91 <u>Units</u> MDL S1-23 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Chromium, Hexavalent

ND 0.01

mg/L

MDL

Method Detection Limit

ND

UNIFIRST/ENSR

PACE Project Number: 810521500

PACE Sample Number: Date Collected: Date Received: 95 0037633 05/20/91 05/21/91

<u>Parameter</u>

Units MDL S6-23

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Chromium, Hexavalent

mg/L 0.01 ND

MDL

Method Detection Limit

ND

UNIFIRST/E	N	S	R
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PACE Project Number: 810522501

PACE Sample Number: Date Collected: Date Received:

05/21/91 05/22/91

95 0037820

<u>Parameter</u>

Units MDL S1-24 FB

#### INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L 1 ND

PACE Sample Number: Date Collected: Date Received: Parameter 95 0037790 05/21/91 05/22/91 Units MDL S1-24

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L 1 ND

PACE Sample Number: Date Collected: Date Received:

<u>Parameter</u>

05/21/91 05/22/91 <u>Units MDL S1-24 Dup</u>

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L 1 ND

PACE Sample Number: Date Collected: Date Received: Parameter

95 0037838 05/21/91 05/22/91 MDL S1A 22

95 0037803

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L 1 ND

Units

MDL

Method Detection Limit

UNIFIRST/ENSR

PACE Project Number: 810523500

PACE Sample Number: Date Collected: 95 0038346 05/22/91 Date Received: 05/23/91

<u>Parameter</u> <u>Units</u> MDL \$1-25

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended mg/L ND

PACE Sample Number: 95 0038370 Date Collected: 05/22/91 Date Received: 05/23/91 <u>Parameter</u> <u>Units</u> MDL

S1-25 FB

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Solids, Total Suspended mg/L 1 ND

Method Detection Limit MDL

UNIFIRST/ENSR

PACE Project Number: 810523500

PACE Sample Number:

95 0038354

Date Collected:

05/22/91

Date Received:

05/23/91

<u>Parameter</u>

Units MDL S1-25 Dup

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

UNIFIRST/ENSR

PACE Project Number: 810523500

PACE Sample Number: Date Collected:

95 0038389 05/22/91

Date Received:

05/23/91

<u>Parameter</u>

<u>Units</u> MDL S1A-23

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Solids, Total Suspended mg/L 1 ND

MDL

Method Detection Limit

ND

UNIFIRST/ENSR

PACE Project Number: 810524501

PACE Sample Number: Date Collected:

95 0038826 05/23/91

Date Received:

05/24/91

<u>Parameter</u>

<u>Units</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

MDL \$1A-24

mg/L

1

ND

MDL

Method Detection Limit

ND

#### PACE Project Number: 810524501 UNIFIRST/ENSR

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0038788 05/23/91 05/24/91 <u>\$1-26</u>
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0038818 05/23/91 05/24/91 <u>S1-26 FB</u>
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND

MDL

Method Detection Limit Not detected at or above the MDL. ND



UNIFIRST/ENSR

PACE Project Number: 810524501

PACE Sample Number: Date Collected:

95 0038796 05/23/91

05/24/91

Date Received: <u>Parameter</u>

MDL S1-26 Dup <u>Units</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ND

MDL

Method Detection Limit

PACE Project Number: 810525500

PACE Sample Number: 95 0038923 Date Collected: 05/24/91 Date Received: 05/25/91 MDL <u>\$1-27</u> <u>Parameter</u> <u>Units</u> INDIVIDUAL PARAMETERS Solids, Total Suspended ND mg/L 1 PACE Sample Number: 95 0038931 Date Collected: 05/24/91 Date Received: 05/25/91 <u>Parameter</u> <u>Units</u> MDL <u>\$1-27 Dup</u> INDIVIDUAL PARAMETERS Solids, Total Suspended mg/L 1 ND PACE Sample Number: 95 0038958 Date Collected: 05/24/91 Date Received: 05/25/91 <u>Parameter</u> <u>Units</u> MDL S1-27 FB INDIVIDUAL PARAMETERS Solids, Total Suspended ND mg/L 1 PACE Sample Number: 95 0038966 Date Collected: 05/24/91 Date Received: 05/25/91 <u>Parameter</u> <u>Units</u> MDL <u>\$1A-25</u> INDIVIDUAL PARAMETERS

mg/L

1

ND

MDL Method Detection Limit

Solids, Total Suspended

UNIFIRST/ENSR

PACE Project Number: 810525501

PACE Sample Number:
Date Collected:

05/25/91 05/25/91

ND

95 0039040

Date Received: Parameter

Units MDL S1-28

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L 1

MDL

Method Detection Limit

ND

UNIFIRS/ENSR PACE Project Number: 810525501

PACE Sample Number: Date Collected: 95 0039059 05/25/91 Date Received: 05/25/91 <u>Parameter</u>

Units MDL S1-28 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Solids, Total Suspended mg/L 1 ND

PACE Sample Number: 95 0039075 Date Collected: 05/25/91 Date Received: 05/25/91 <u>Parameter</u> Units MDL \$1-28 FB

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Solids, Total Suspended mg/L ND

MDL Method Detection Limit ND Not detected at or above the MDL.

UNIFIRS/ENSR

PACE Project Number: 810525501

PACE Sample Number:

95 0039083

Date Collected:

05/25/91

Date Received: Parameter

05/25/91 Units MDL S1A-26

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L 1 ND

MDL

Method Detection Limit

ND

UNIFIRST/ENSR

PACE Project Number: 810526500

PACE Sample Number:			95 0039164
Date Collected:			05/26/91
Date Received:			05/26/91
<u>Parameter</u>	<u>Units</u>	MDL	<u>\$1-29</u>

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

 PACE Sample Number:
 95 0039199

 Date Collected:
 05/26/91

 Date Received:
 05/26/91

 Parameter
 Units
 MDL
 S1-29 FB

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit

UNIFIRST/ENSR

PACE Project Number: 810526500

PACE Sample Number: Date Collected:

95 0039172 05/26/91

Date Received:

05/26/91-

<u>Parameter</u>

Units MDL S1-29 Dup

1

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS Solids, Total Suspended

mg/L

ND

MDL

Method Detection Limit

UNIFIRST/ENSR PACE Project Number: 810526500

 PACE Sample Number:
 95 0039202

 Date Collected:
 05/26/91

 Date Received:
 05/26/91

Parameter Units MDL S1A-27

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit

UNIFIRST/ENSR

PACE Project Number: 810527500

 PACE Sample Number:
 95 0039288

 Date Collected:
 05/27/91

 Date Received:
 05/27/91

 Parameter
 Units
 MDL
 \$1-30

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

 PACE Sample Number:
 95 0039318

 Date Collected:
 05/27/91

 Date Received:
 05/27/91

 Parameter
 Units
 MDL
 \$1-30 FB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

UNIFIRST/ENSR PACE Project Number: 810527500

PACE Sample Number: 95 0039296
Date Collected: 05/27/91
Date Received: 05/27/91

Parameter Units MDL S1-30 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS
Solids, Total Suspended mg/L 1 ND

MDL Method Detection Limit

UNIFIRST/ENSR

PACE Project Number: 810527500

PACE Sample Number:

95 0039326

Date Collected:

05/27/91

Date Received:

05/27/91 S1A-28

Parameter

<u>Units</u> MDL

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Solids, Total Suspended

mg/L

1

ND

MDL

Method Detection Limit

ND

UNIFIRST/ENSR		Proje	ct# 810529.501	00118
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL_	95 0039466 05/23/91 05/29/91 <u>\$1A-29</u>	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND	
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0039547 05/23/91 05/29/91 <u>\$1-31</u>	
INDIVIDUAL PARAMETERS Chromium, Hexavalent	mg/L	0.01	ND	
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL_	95 0039555 05/23/91 05/29/91 <u>\$1-31 Dup</u>	
INDIVIDUAL PARAMETERS Chromium, Hexavalent	mg/L	0.01	ND	
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0039563 05/23/91 05/29/91 <u>\$1-31 FB</u>	
INDIVIDUAL PARAMETERS Chromium, Hexavalent	mg/L	0.01	ND	
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0039571 05/23/91 05/29/91 S6-31	
INDIVIDUAL PARAMETERS Chromium, Hexavalent	mg/L	0.01	ND	

Method Detection Limit Not detected at or above the MDL.

MDL ND

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UNIFIRST/ENSR		Proje	ect# 810529.501	00117
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0039601 05/23/91 05/29/91 \$1-31	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved	mg/L mg/L mg/L mg/L mg/L	1 10 0.1 0.2 1	71 242 ND 11.2 608	Pm 7/17/91
Solids, Total Suspended Sulfate	mg/L ma/L	1 5	ND 29.8	·

MDL

Method Detection Limit Not detected at or above the MDL. ND

## UNIFIRST/ENSR

## Project# 810529.501

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0039610 05/23/91 05/29/91 <u>\$1-31 Dup</u>	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved	mg/L mg/L mg/L mg/L mg/L	1 10 0.1 0.2	71 238 ND 11.3 628	
Solids, Total Suspended Sulfate	mg/L mg/L	1 5	ND 33.6 \( \int \)	pon 7/17/91

MDL

Method Detection Limit Not detected at or above the MDL. ND

			200	<i>P 1</i> F	2100
111	W F	<b>P</b> I	ĸ\.	: / F	NSR

# Project# 810529.501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0039628 05/23/91 05/29/91 S1-31 FB	
INORGANIC ANALYSIS				·
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved	mg/L mg/L mg/L mg/L mg/L	1 1 0.1 0.2	1 ND ND ND ND	
Solids, Total Suspended Sulfate	mg/L mg/L	1 5	ND US	por 7/17/91

MDL Method Detection Limit

## UNIFIRST/ENSR

## Project# 810529.501

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0039636 05/23/91 05/29/91 S6-31	
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS Alkalinity, Total Chloride Fluoride, Total Silica, dissolved Solids, Total Dissolved	mg/L mg/L mg/L mg/L mg/L	1 10 0.1 0.2	69 249 ND 11 682	
Solids, Total Suspended Sulfate	mg/L mg/L	1 5	ND 34.2 J	Por 7/17/91
MDI Wothod Dotoction Limit				7

MDL

Method Detection Limit Not detected at or above the MDL. ND

UNIFIRST/ENSR

Project# 810529.501 00123

95 0039679

PACE Sample Number: Date Collected:

05/23/91 05/29/91 <u>Units MDL S1-31</u>

Date Received: Parameter

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Nitrogen, Nitrate plus Nitrite Phosphorus, Total Total Organic Carbon mg/L 0.20 3.4 mg/L 0.3 ND mg/L 0.10 1.1 \( \)

4/17 bon 4

MDL

Method Detection Limit

UNIFIRST/ENSR

Project# 810529.501

 PACE Sample Number:
 95 0039687

 Date Collected:
 05/23/91

 Date Received:
 05/29/91

 Parameter
 Units
 MDL
 \$1-31 Dup

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Nitrogen, Nitrate plus Nitrite mg/L 0.20 3.5 Phosphorus, Total mg/L 0.3 ND Total Organic Carbon mg/L 0.10 .97  $\lor$ 

7/17/91

MDL Method Detection Limit

0	Λ	1	2	5
17	17	- 1		7

UNIFIRST/ENSR	Project# 810529.		
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0039695 05/23/91 05/29/91 S1-31 FB
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Nitrogen, Nitrate plus Nitrite Phosphorus, Total Total Organic Carbon	mg/L mg/L mg/L	0.02 0.3 0.10	0.3 ND .52

MDL

Method Detection Limit Not detected at or above the MDL. ND

UNIFIRST/ENSR		Project# 810529.501	00126
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	95 0039709 05/23/91 05/29/91 MDL S6-31	
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Nitrogen, Nitrate plus Nitrite Phosphorus, Total Total Organic Carbon	mg/L mg/L mg/L	0.20 3.3 0.3 ND 0.10 .84 U por	11 <b>0</b> l
MDL Method Detection Limit		7/1	4/911

Method Detection Limit Not detected at or above the MDL.

MDL ND UNIFIRST/ENSR

PACE Project Number: 810530502

00127

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0040120 05/29/91 05/30/91 S1-32
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids. Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0040138 05/29/91 05/30/91 <u>\$1-32 Dup</u>
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0040154 05/29/91 05/30/91 S1-32 FB
INORGANIC ANALYSIS			•
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0040162 05/29/91 05/30/91 S1A-30
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND

MDL

Method Detection Limit
Not detected at or above the MDL. ND

UNIFIRST/ENSR	PACE Proj	ect Numb	per: 810531507
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0040642 05/30/91 05/31/91 S1-33
INORGANIC ANALYSIS			
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	į	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0040650 05/30/91 05/31/91 <u>S1-33 Dup</u>
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0040677 05/30/91 05/31/91 S1-33 FB
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0040685 05/30/91 05/31/91 <u>\$1A-31</u>
INDIVIDUAL PARAMETERS Solids, Total Suspended	mg/L	1	ND

Method Detection Limit Not detected at or above the MDL.

MDL ND Unifirst, Geotrans

PACE Project Number: 810531509

00129

PACE Sample Number: Date Collected: Date Received: Parameter

<u>ameter</u> <u>Or</u>

95 0040944 05/29/91 05/31/91 Units MDL <u>\$82</u>

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon

MDL Method Detection Limit

mg/L 1 49.0 mg/L 0.02 1.6 3 mg/L 0.10 17.8

Unifirst,Geotrans

PACE Project Number: 810531509

PACE Sample Number: Date Collected: Date Received: Parameter	Units		95 0040952 05/29/91 05/31/91 S818
<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	2818

INORGANIC ANALYSIS

Chloride mg/L 1 35.4	
Nitrogen, Nitrate plus Nitrite mg/L 0.02 1.7 5	
Total Organic Carbon mg/L 0.10 18.6	

MDL Method Detection Limit

Unifirst, Geotrans

PACE Project Number: 810531509

PACE Sample Number:

Date Collected:

Date Received:

<u>Parameter</u>

95 0040960

05/29/91

05/31/91

Units MDL

MDL UG12

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon mg/L mg/L mg/L 1 50.6 0.02 <del>0.02U</del>R 0.10 10.9

pon 917/91

MDL

Method Detection Limit

Unifirst, Geotrans PACE Projec

PACE Project Number: 810531509

PACE Sample Number:

95 0040979 05/29/91

Date Collected: Date Received:

05/29/91

<u>Parameter</u>

Units MDL FDUG12

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon mg/L 1 50.0 mg/L 0.02 ND R mg/L 0.10 11.9 Par 7/7/91

MDL

Method Detection Limit

Unifirst, Geotrans

PACE Project Number: 810531509

PACE Sample Number:

95 0040995

Date Collected:

05/29/91

Date Received:

05/31/91

Parameter

<u>Units</u>

MDL FBUG12

**INORGANIC ANALYSIS** 

INDIVIDUAL PARAMETERS

Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon

Par 13/9/

MDL

Method Detection Limit

Unifirst, Geotrans

PACE Project Number: 810531509

PACE Sample Number:

95 0041002 05/29/91

Date Collected:

Date Received:

05/31/91

<u>Parameter</u>

<u>Units</u>

**INORGANIC ANALYSIS** 

MDL <u>UG16</u>

INDIVIDUAL PARAMETERS

Chloride Nitrogen, Nitrate plus Nitrite Total Organic Carbon mg/L 10 264 1.47 1.47 J mg/L 0.02 mg/L 1.00 704

MDL

Method Detection Limit

Unifirst, Geotrans

PACE Project Number: 810531509

PACE Sample Number: Date Collected: Date Received:

95 0041010 05/29/91

05/31/91

**Parameter** 

MDL <u>Units</u> GO1DB

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

3.9 5 pm 7/17/91 4.3 Chloride mg/L 10 Nitrogen, Nitrate plus Nitrite 0.2 mg/L Total Organic Carbon mg/L 0.10

MDL Method Detection Limit



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/18/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Treatment system samples from both the UniFirst and W.R. Grace treatment systems were included in this sample delivery group. Data quality for this sample delivery group was good.

Only one set of quality control samples was analyzed with this sample delivery group. UniFirst samples were chosen as the QC samples for this sample delivery group.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Nine samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 18, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-21	3665	05/18/91
S1-21DUP	3666	05/18/91
S1-21TB	3665	05/18/91
S4-19	3672	05/18/91
V131V9FS	3680	05/18/91
V154V9FS	3682	05/18/91
V197V9FS	3683	05/18/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in all samples.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met on 5/28/91.

### B. Continuing

Continuing calibration criteria were met on 5/28/91 with the exception of the % difference for methylene chloride (actual 45.4; criteria 25), acetone (actual 26.1; criteria 25), 2-butanone (actual 37.2; criteria 25), 4-methyl-2-pentanone (actual 40.3; criteria 25), 2-hexanone (actual 42.4; criteria 25), and 1,1,2,2-tetrachloroethane (actual 29.8; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/29/91 (12:42).

Continuing calibration criteria were met on 5/29/91 (23:20) with the exception of the % difference for trans-1,3-dichloropropene (actual 161.8; criteria 25), 4-methyl-2-pentanone (actual 25.6; criteria 25), and 2-hexanone (actual 25.8; criteria 25). Detection limits for trans-1,3-dichloropropene were estimated in Samples S1-21MS and S1-21MSD. Other data were not affected.

#### IV. Blanks

Acetone was reported in all three method blanks, and methylene chloride was also reported in Method Blank VBLK02. The



results for acetone in Sample V131V9FS was qualified as less than the reported value.

Although not reported on the Form I, 2-butanone was detected in the trip blank and is listed on the quant report. The result for 2-butanone in Sample V131V9FS was rejected due to the blank contamination.

## V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-21. The percent recoveries for 1,1-dichloroethene in the MS and the MSD were below QC criteria. No positive results for 1,1-dichloroethene were reported in field samples; data were not affected.

The compounds 1,2-dichloroethenes and 1,1,1-trichloroethane were in the MS and the MSD but not in Samples S1-21 or S1-21DUP. These compounds were rejected in the MS and MSD.

#### VII. Field Duplicates

Compounds and concentrations (in ug/L) reported in Samples S1-21 and S1-21DUP were as follows:

Compound .	<u> 51-21</u>	S1-21DUP
Trichloroethene	78	75
Tetrachloroethene	3200	3300

Results were within QC criteria.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.



## X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data, with the exception of the failure to report 2-Butanone on the Form I for the trip blank.

## XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

## XII. System Performance

System performance requires attention. Manual integrations should be addressed.

The holding times for non-preserved samples was exceeded on all samples.

#### XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was good. Detection limits for aromatic compounds were estimated in all samples.

Detection limits for trans-1,2-dichloropropene were qualified as estimates in S1-21MS and S1-21MSD.

# VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3665.3

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2744

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec.100. Date Analyzed: 5/29/91

Column: (pack/cap) PACK Dilution Factor: 20.00

		CONCE	NTR/	ATION U	NITS:		
CAS NO.	COMPOUND	(ug/L	or	ug/Kg)	UG/L	(	Q
	~						
	<b>5</b> . •			:		; :	:
74-87-3	Chloromethane _			<u>:</u>	200.	١U	i
1 74-83-9	Bromomethane			!	200.	١U	•
75-01-4	Vinyl Chloride_			!	200.	ΙU	
75-00-3	Chloroethane			!	200.	:U	
75-09-2	Methylene Chlor	196 <sup></sup>		!	100.	!U	:
67-64-1	Acetone Carbon Disulfid			!	200.	IU	
1 75-15-0	Carbon Disulfid	e		<b>i</b>	100.	: U	;
1 75-35-4	1,1-Dichloroeth	ene		¦	100.	١U	1
1 75-34-3	1,1-Dichloroeth	ane		;	100.	: U	;
1 540-59-0	1,2-Dichloroeth	ene (tot	al)	;	100.	١U	;
67-66-3	Chloroform			;	100.	١U	+
107-06-2	1.2-Dichloroeth	ane			100.	: U	;
1 78-93-3	2 <sup>-</sup> Butanone			;	200.	: U	:
1 71-55-6	1,1,1-Trichloro	ethane _		;	100.	١U	;
: 56-23-5	Carbon Tetrachl	oride		!	100.	: U	:
108-05-4	Viħyl Acetate _			;	200.	١U	;
1 75-27-4	Bromodichlorome	thane			100.	١U	:
1 78-87-5	1,2-Dichloropro	oane		;	100.	:U	:
110061-01-5	cis-1,3-Dichlore	propene			100.	١U	:
1 79-01-6	Trichloroethene			!	78.	; J	:
124-48-1	Dibromochlorome	thane		:	100.	ŧυ	:
1 79-00-5	1,1,2-Trichloroe	thane _		:	100.	ΙU	;
1 71-43-2	Benzene	_		1	100.	:UJ	;
10061-02-6	Trans-1,3-Dichlo	roprope	ne		100.	¦U	1
75-25-2			_		100.	١U	:
108-10-1	4-Methyl-2-Penta	inone		:	200.	١U	;
591-78-6	2-Hexanone			;	200.	ΙŪ	;
127-18-4	Tetrachloroether	. <u></u>		;	3200.	:	:
79-34-5	1,1,2,2-Tetrachl	oroethan			100.	ŀU	
108-88-3	Toluene		-	;	100.	: 0.7	į
108-90-7	Chlorobenzene			;	100.	101	i
100-41-4	Ethylbenzene				100.	ווין	
100-42-5	Styrene			<u>;</u>	100.	נטו	•
1330-20-7	Xylene (total)			;	100.	رّن:	į
-000 20 /	Ayrene (totar)			·-;		!	•
				'		- '	'

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

		ļ
S1 -21	L	:
		,

Lab Name: PACE Contract:

SDG No.:

00023

1atrix: (soil/water) WATER

Lab Sample ID: 3665.3

Sample wt/vol:

5. (g/mL) ML

Lab File ID: J2744

.evel: (low/med) LOW

Date Received: 5/18/91

7 Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	   RT  ======	: EST. CONC.	; Q ;
1				
2,				{}
1 4,				!!
6				
?; 8;				!!
9				
11				<u> </u>
12				!!
' 14				¦;
15				!!
17				
19				
22.				
24				
25.		;		
26. 27.				
28		,		!
20				
		i-		:

FORM I VOA-TIC

1/87 Rev.

EPA SAMPLE NO.

s1-201040°29

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3666.1

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2764

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec.100. Date Analyzed: 5/29/91

Column: (pack/cap) PACK Dilution Factor: 20.00

CAS NO. COMPOUND	CONCENTRAT:	_ <del>-</del>		Q 
1 74 07-2 Chlanashham		1 200	1	;
<pre>74-87-3Chloromethane 74-83-9Bromomethane</pre>		200.	: U	i 1
: 75-01-4Vinyl Chloride		200.	: U	,
75-00-3Chloroethane_		200.	. U	1
75-09-2Methylene Chlo		100.	10	
! 67-64-1Acetone	1105	200.	: U	1
67-64-1Acetone   75-15-0Carbon Disulfic		100.	: 0	•
75-35-41,1-Dichloroet	hono	100.	:0	
75-34-31,1-Dichloroet	hane	100.	; U	; •
540-59-01,2-Dichloroet	hene (total)	100.	:0	į
67-66-3Chloroform		100.	: U	
107-06-21,2-Dichloroet	hane	100.	10	į
78-93-32-Butanone		1 200 <del>-329</del> .	ان	cre
71-55-61,1,1-Trichlore	oethane	100.	Ü	اوادهای
1 56-23-5Carbon Tetrach	loride	100.	ίŪ	;
108-05-4Vinyl Acetate		200.	:U	;
: 75-27-4Bromodichlorome	ethane	100.	١U	:
78-87-51,2-Dichloropro	pane	100.	١U	:
110061-01-5cis-1,3-Dichlor	opropene	100.	١U	;
79-01-5Trichloroethene		75.	¦ J	;
: 124-48-1Dibromochlorome	thane	100.	١U	:
79-00-51,1,2-Trichlore	ethane	100.	١U	1
71-43-2Benzene		100.	لاں،	<b>!</b>
10061-02-6Trans-1,3-Dichl	oropropene	100.	:U	1
75-25-2Bromoform	,	100.	:u	<b>!</b>
108-10-14-Methy1-2-Pent	anone	200.	יטו	ł
591-78-62-Hexanone		200.	:U	1
i 127-18-4Tetrachloroethe	ne	3300.	1	:
79-34-51,1,2,2-Tetrach	loroethane	100.	; U	;
108-88-3Toluene		100.	ן טן:	;
108-90-7Chlorobenzene _		100.	107	;
100-41-4Ethylbenzene		100.	נטו	;
100-42-5Styrene		100.	וח:	:
1330-20-7Xylene (total)_		100.	;UJ	;
			-	!

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

SDG No.:

Matrix: (soil/water) WATER - Lab Sample ID: 3666.1

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2764

\_evel: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec.100. Date Analyzed: 5/29/91

Column: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:

31-21DUP

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	1 1/1	EST. CONC.	
,,	,		,	;====;
2		' !		;;
3		'	' !	<u>'</u> '
4				
				! ;
				;;
7		1		!;
9				
10				
12				;
				;
16				
				:
17.				
18;		!		:
19				
20		;		!
21;			!	
		!	!	
		!	!	!
24		!		<u></u>
25				;
26	<u> </u>		i	
28.		:	' !	!
29.				
			;	;

FORM I VOA-TIC

1/87 Rev.

EPA SAMPLE NO.

s1 70736

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3667.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2763

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec.100.
Date Analyzed: 5/29/91

Column: (pack/cap) PACK Dilution Factor: 1.00

	CONCENTR	ATION UNITS:			
CAS NO. COMPOUND	(ug/L or	ug/Kg) UG/L		Q	
					_
1		1	•		:
1 74-87-3Chlorome	thane	; 1		U	1
1 74-83-9Bromomet	hane	; 1	o. :	U	:
75-01-4Vinyl Ch	loride	;	0. :	IJ	;
75-00-3Chloroet	hane	; 1	0. :	U	1
1 75-09-2Methylen	e Chloride	;	5. :	U	1
1 67-64-1Acetone 1 75-15-0Carbon D 1 75-25-41 1-Dich		1	o. :	U	1
1 75-15-0Carbon D	isulfide	;	5. !	U	1
1 75-35-41,1-Dich	loroethene	:	5. :	U	:
1 75-34-31,1-Dich	loroethane		5. :	U	:
540-59-01,2-Dich	loroethene (total)	<b>:</b>	5. :	U	:
67-66-3Chlorofo	rm	;	5. !	U	1
107-06-21,2-Dich	loroethane		5. :	U	! cre
1 78-93-32-Butano	ne	103		U	1 6127191
71-55-61,1,1-Tr	ichloroethane		5. :	U	1
56-23-5Carbon To	trachloride	;	5. !!	U	:
108-05-4Vinyl Acc	etate =====	10	). It	U	:
75-27-4Bromodic	nloromethane	:	5. IL		1
78-87-51,2-Dich	loropropane	<del></del> ;	5. II	J	:
10061-01-5cis-1,3-	Dichloropropene	:	5. :1		:
79-01-6Trichlore	pethene	;	5. IL	ر	:
124-48-1Dibromock	loromethane	; <u></u>	5.		1
79-00-51,1,2-Tr:	chloroethane	<del></del> :	5. IL		ì
71-43-2Benzene				رَدَ	
10061-02-6Trans-1,	R-Dichloropropene		5. 11	-	!
75-25-2Bromoform	·		5. It		
108-10-14-Methyl-		:	). ¦L	_	•
591-78-62-Hexanor	2 /	!	). :	-	•
127-18-4Tetrachlo	roethere	;	;. :L		
79-34-51,1,2,2-1	etrachloroethane		j.  L		•
108-88-3Toluene	etrachior de mane	'		,	• •
108-90-7Chlorober		;	i. !L		
100-d1-dE+hulb		'	i. IL		1 1
100-41-4Ethylbenz	CIIC			-	) 
100-42-5Styrene _				1)	•
1330-20-7Xylene (t	Otal/	;	i. ¦U	ן עו	1 \$
~~~~~~~~~~		'	'-	;	•

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

S1-21TB

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3667.0

Sample wt/vol:

5. (g/mL) ML

Lab File ID: J2763

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

0003

CONCENTRATION UNITS: (ua/L or ua/Ka) UG/L

Number TICs found:		or ug/Kg)		
: CAS NUMBER :	COMPOUND NAME		EST. CONC.	; Q ;
•		•		•
1 2			<del></del>	
<b></b>				
! 7!!		! ;		
		:		
! 10		<u>;</u>		
				·
12!!				
13				!!
. 16				
; 17;		'!		, ,
18;;				!!
19				
21.		''		' <b></b> '
22		;		
23				!
24;;	'	;		
26				!
27				
28	<b></b>			1
29				:
1	•			
'	'	'.	i	'

FORM I VOA-TIC

# 1A VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3672.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2748

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec.100. Date Analyzed: 5/29/91

'Column: (pack/cap) PACK Dilution Factor: 10.00

		CONCE	NTRA	ATION U	NITS:		
CAS NO.	COMPOUND	(ug/L	or	ug/kg)	UG/L	ļ	Q
							;
1 74-87-3	Chloromethane _			:	100.	: U	;
: 74-83-9	Bromomethane			;	100.	: U	+
1 75-01-4	Vinyl Chloride_			;	100.	٠u	:
: 75-00-3	Chloroethane			;	100.	١U	;
1 75-09-2	Methylene Chlor	ıde		:	50.	ŧ۵	:
1 67-64-1	Acetone Carbon Disulfid			;	100.	١U	;
1 75-15-0	Carbon Disulfid	e		:	50.	ŀυ	+
: 75-35-4	1,1-Dichloroeth	ene		:	50.	١U	;
: 75-34-3	1,1-Dichloroeth	ane		: -:	50.	٠u	;
: 540-59-0	1,2-Dichloroeth	ene (tot	al)	:	50.	ίU	;
1 67-66-3	Chloroform			;	. 50.	١U	;
: 107-06-2	1.2-Dichloroeth	ane		:	50.	١U	1
78-93-3	2-Butanone			:	100.	: U	1
71-55-6	1,1,1-Trichloro	ethane		!	. 50.	٠U	;
56-23 <i>-</i> 5	Carbon Tetrachlo	oride		;	50.	١U	1
108-05-4	Vinyl Acetate _			:	100.	١U	;
75-27-4	Bromodichlorome	thane		<u></u> ;	50.	:U	:
78-87-5	1,2-Dichloroprop	oane		;	50.	١U	:
10061-01-5	cis-1,3-Dichlord	propene		;	50.	١U	:
	Trichloroethene				45.	: J	:
124-48-1	Dibromochloromet	trane		;	50.	: U	:
79-00-5	1,1,2-Trichloroe	thane		:	50.	١U	;
71-43-2					50.	;uJ	:
	Trans-1,3-Dichlo	roprope	ne	:	50.	١U	;
75-25-2	Bromoform		•	;	50.	١U	:
108-10-1	4-Methvl-2-Penta	none		<b>!</b>	100.	١U	;
591-78-6	2-Hexanone			;	100.	ŧυ	:
127-18-4	Tetrachloroether			:	1700.	;	i
79-34-5	1,1,2,2-Tetrachl	oroetha	 1e	:	50.	: U	1
108-88-3	Toluene		•	;	50.	Lu:	1
108-90-7	Chlorobenzene			;	50.	: 50	1
100-41-4	Ethylbenzene			;	50.	101	1
100-42-5	Styrene			;	50.	IUJ	i
1330-20-7	Xylene (total)			;	50.	iū	1
	,			1	- · ·	- 5	

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

54-19

00042

Matrix: (soil/water) WATER

Lab Sample ID: 3672.6

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2748

.evel: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

1.	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	! Q !=====
2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25.			•		
3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	1 •		·		·
4.         5.         6.         7.         8.         9.         10.         11.         12.         13.         14.         15.         16.         17.         18.         19.         20.         21.         22.         23.         24.         25.	2		!		: 
5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	3	   	!		!
6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	4	   			!
6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	5		<b>:</b>		
8.         9.         10.         11.         12.         13.         14.         15.         16.         17.         18.         19.         20.         21.         22.         23.         24.         25.	6		<b>:</b>		
9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	7:	 	!:		
10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	8:		!!		
11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	· ·				
12. 13. 14. 15. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	10				;
12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	• •		! ;	;	!
13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.					
15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	13		: ;		
15.	14.			,	;
16. 17. 18. 19. 20. 21. 22. 23. 24.	15				;
18.				,	
18	17.			!	;
19	18.	•			;
20			:		
21	20.			i i	
22	21.	1			
23.	77			,	
25					;
25	24.		;		;
**************************************	25				;
					;
~					;
					;
28	29			,	
30.			; .	:	;
·	·;		:		:

FORM I VOA-TIC

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 1 V131V9FS

Lab Name: PACE

Contract:

'----0-0-1-<del>2-</del>6--

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3680.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2751

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

CAS NO.	COMPOUND			ATION U ug/Kg)		0
74 07 2	Chloromethane			1	100.	: : : : : : : : : : : : : : : : : : :
74-87-3	Bromomethane			·¦	100.	:0 :
79-03-3	Vinyl Chloride				240.	, ,
! 75-00-3	Chloroethane				100.	: :
! 75-09-0	Methylene Chlor			¦	50.	iu :
1 67-64-1	Acetone	100		'	73.	BJU
! 75-15-0	Carbon Disulfic			;	50.	U
1 75-35-4	1,1-Dichloroet	ene		;	50.	:0 :
1 75-34-3	1,1-Dichloroet	iane		:	50.	
1 540-59-0	1,2-Dichloroet	nene (tota	a I )	:	730.	
67-66-3	Chloroform			:	50.	iu i
107-06-2	1,2-Dichloroeth	ane		;	50.	iu :
78-93-3	2-Butanone			;	140.	: R :
1 71-55-6	1,1,1-Trichlore	ethane		;	50.	;u ;
1 56-23-5	Carbon Tetrachl	oride		;	50.	:U :
108-05-4	Vinyl Acetate			;	100.	:U :
1 75-27-4	Bromodichlorome	thane		:	50.	;U ;
: 78-87-5	1,2-Dichloropro	pane		:	50.	: U:
110061-01-5	cis-1,3-Dichlor	opropene		:	50.	:U :
1 79-01-6	Trichloroethene				400.	1
124-48-1	Dibromochlorome	thane		!	50.	: U
1 79-00-5	1,1,2-Trichloro	ethane		:	50.	:U :
1 71-43-2					50.	: 40:
110061-02-6	Trans-1,3-Dichl	oroproper	ie .	;	50.	:U :
	Bromoform				50.	:U :
108-10-1	4-Methv1-2-Pent	anone		1	100.	: U :
591-78-6	2-Hexanone			;	100.	:U :
127-18-4	Tetrachloroethe	ne		_ :	41.	: J :
79-34-5	1,1,2,2-Tetrach	lorcethan	e	:	50.	: U :
108-88-3	Toluene			;	50.	: U-J :
108-90-7	Chlorobenzene			;	50.	: Lu
100-41-4	Ethylbenzene			;	50.	: LU :
100-42-5	Styrene			:	50.	ו לח:
1330-20-7	Xylene (total)_			;	50.	: C·U
				<sup>i</sup>		- ' '

# VOLATILE ORGANICS ANALYSIS DATA SHEET TTNTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: V131V9FS

ETH DAPITLE NU.

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3680.7

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2751

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Number TICs found: 0

: CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	; ; ; ; =====;
1		!		!;
2	]	!	·	::
			!	::
			!	<u> </u>
		'	,	'' :
7	•		!	
	1	;	! !	
		•		
	i	<u> </u>	,	
			' <b></b>	' <b></b> '
15	!			;
16				!
1/•				;
19.				!
20.				;
		;		
22		;	;	;
	'' <b>'</b>			:
44			!	
·			;	;
27.				:
28				;
29			,	;
30		:	i	;
:	<b>:</b>	-	:	

FORM I VOA-TIC

# 1A VOL TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

(001

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3683.1

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2762

Level: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec.100. Date Analyzed: 5/29/91

Column: (pack/cap) PACk Dilution Factor: 5.00

		CONCENTR	RATION	UNITS:		
CAS NO.	COMPOUND	(ug/L or	ug/Kg	) UG/L		Q
:			;		1	:
: 74-87-3	Chloromethane		:	50.	۱U	;
1 74-83-9	Bromomethane		:	50.	١U	1
÷ 75-01-4	Vinyl Chloride		;	50.	١U	1
1 75-00-3	Chloroethane		;	50.	١U	i
1 75-09-2	Methylene Chlori	de	:	25.	ŀυ	:
67-64-1	Acetone		;	50.	١U	;
: 75-15-0	Carbon Disulfide		-	25.	: U	;
1 75-35-4	1,1-Dichloroethe	ne	:	25.	ŧυ	;
1 75-34-3	1,1-Dichloroetha	ne	;	25.	ŀυ	:
: 540-59-0	1,2-Dichloroethe	ne (total	) !	450.	:	;
1 67-66-3	Chloroform		:	25.	ŀυ	;
107-06-2	1.2-Dichloroetha	ne	1	25.	: U	;
1 78-93-3	2-Butanone		:	50.	١U	1
1 71-55-6	1,1,1-Trichloroe	thane	;	25.	ŧυ	1
1 56-23-5	Carbon Tetrachlo	ride	;	25.	١U	:
108-05-4	Vinyl Acetate		!	50.	١U	ł
1 75-27-4	Bromodichloromet	nane	:	25.	١u	;
1 78-87-5	1,2-Dichloropropa	ane	:	25.	ŀυ	;
:10061-01-5	cis-1.3-Dichloro	oropene	:	25.	١U	;
1 79-01-6	Trichloroethene		:	440.	:	;
124-48-1	Dibromochloromet	iane	;	25.	រប	
79-00-5	1,1,2-Trichloroe	thane	;	25.	١U	;
1 71-43-2	Benzene		:	25.	:07	;
10061-02-6	Trans-1,3-Dichlor	opropene	;	25.	10	:
75-25-2	Bromoform	, ,	;	25.	l U	;
108-10-1	4-Methy1-2-Pentar	none	;	50.	;U	:
591-78-6	2-Hexanone		;	50.	١Ū	
127-18-4	Tetrachloroethens	·	;	25.	:U	;
	1,1,2,2-Tetrachlo			25.	; U	1
108-88-3	Toluene		:	25.	Lu:	•
108-90-7	Chlorobenzene			25.	101	
100-41-4	Ethylbenzene			25.	107	i
100-42-5	Styrene		;	25.	: U 7	į
1330-20-7	Xylene (total)			25.	:U.)	i
	Ayrene ( oo dar /		;	20.	:	:
					· ·	'

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V154V9FS : Contract: : :\_\_\_\_\_:

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:0137

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2762

\_evel: (low/med) LOW Date Received: 5/18/91

% Moisture: not dec.100. Date Analyzed: 5/29/91

Column: (pack/cap) PACK Dilution Factor: 5.00

CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/Kg) UG/L

. CAS NUMBER	COMPOUND NAME	1 17 1	: EST. CONC.	; ; ; ;
1				
2; 3;				!!
4				
5    6.				<u> </u>
7				;;
				!!
				;;
11.				
, 12				'; ';
14		!		:
16		;		;;
: 17;				
19				
20				;
22				
23				!
25		'		
07				
	;	i		;
29				:
30	·;			

FORM I VOA-TIC

EPA SAMPLE NO.

. | V197V9FS

Contract: \_ab Name: PACE

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

datrix: (soil/water) WATER Lab Sample ID: 3682.3

Sample wt/vol: 5. (g/mL) ML Lab File ID: J2753

Level: (low/med) LOW Date Received: 5/18/91

/ Moisture: not dec.100. Date Analyzed: 5/29/91

Column: (pack/cap) PACk Dilution Factor: 10.00

		CONCENTRA	TION UN	IITS:		
CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/L	Q	
			;		;	- 1
1 74-87-3	Chloromethane _		:	100.	; U	;
1 74-83-9	Bromomethane		;	100.	:U	1
1 75-01-4	Vinyl Chloride_		:	760.	ŀ	:
75-00-3	Chloroethane		:	100.	¦ U	;
: 75-09-2	Methylene Chlor	ıde	;	50.	!U	;
67-64-1	Acetone		;	100.	١U	;
: 75-15-0	Carbon Disulfid	<b>e</b>	;	50.	: U	;
1 75-35-4	1,1-Dichloroeth	ene	:	50.	١U	1
1 75-34-3	1,1-Dichloroeth	ane	;	50.	۱u	;
1 540-59-0	1,2-Dichloroeth	ene (total)	;	1100.	:	ļ
: 67 <i>-</i> 66 <i>-</i> 3 <i></i>	Chloroform		;	5Q.	: U	;
107-06-2	1,2-Dichloroeth	ane	:	50:	١U	1
1 78-93-3	2-Butanone			100.	١U	;
1 71-55-6	1,1,1-Trichloroe	ethane	:	50.	١U	;
: 56-23-5	Carbon Tetrachlo	oride	;	50.	: U	- 1
108-05-4	Vinyl Acetate _		:	100.	:U	;
1 75-27-4	Bromodichloromet	thane	_ ;	50.	:U	;
1 78-87-5	1,2-Dichloroprop	oane	_ ;	50.	١U	:
110061-01-5	cis-1,3-Dichlore	opropene	!	50.	١U	1
: 79-01 <i>-</i> 6	Trichloroethene		;	220.	1	;
124-48-1	Dibromochloromet	thane	:	50.	: U	1
79-00-5	1,1,2-Trichloroe	ethane	_;	50.	:υ	-
71-43-2	Benzene		_ ;	50.	ון ל	;
10061-02-6	Trans-1,3-Dichlo	ropropene _	_;	50.	¦U	;
75-25-2	Bromoform		_ :	50.	: U	:
108-10-1	4-Methyl-2-Penta	none	_:	100.	١U	1
591-78-6	2-Hexanone		<u> </u>	100.	١U	;
127-18-4	Tetrachloroether	J6	_ :	19.	; J	:
79-34-5	1,1,2,2-Tetrachl	orcethane	_ ;	50.	ŀU	;
108-88-3	Toluene	-	<b>-</b> ;	50.	:uJ	;
108-90-7	Chlorobenzene		-;	50.	:uJ	+
100-41-4	Ethylbenzene		_;	50.	וחי)	;
100-42-5	Styrene		- ;	50.	رْں:	;
1330-20-7	Xylene (total)		<b>-</b> ;	50.	IUJ	1
- <del></del>	,		- ;	•		;
~						_

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V197V9FS

ETH DMITTLE NU.

Lab	Name:	PACE	Contract:

0014

Matrix: (soil/water) WATER

Lab Sample ID: 3682.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: J2753

Level: (low/med) LOW

Date Received: 5/18/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

# CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/L

				<del>-</del> ,
CAS NUMBER	COMPOUND NAME	; RT	: EST. CONC.	, a ;
!===========			!==========	 !=====:
1.		!	· !	
		:		
		,		
4	, ====================================	!	!	
5		!	!	! ;
6			!	!;
7;			' <b></b>	
8;				!!
9			 	;
			·	
11				
				<u> </u>
				;
16i				!
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		;	!	
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		;		

FORM I VOA-TIC



#### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEMS
VOLATILES ANALYSES DATA
METHOD 524.2 ANALYSES

Samples Collected 5/18/91

Chemical Analyses Performed By PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

With the exception of the field blanks and trip blank, foaming occurred during sample analyses, especially in Samples S5-16, S6-21, and S6-21DUP.

Detection limits for aromatic compounds were estimated in UniFirst samples.

Cooler temperature upon receipt of W.R. Grace samples by the laboratory was  $4^{\circ}\text{C}$ ; cooler temperature for the UniFirst samples was also  $4^{\circ}\text{C}$ .

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Case Narrative

Seven samples were collected and submitted to PACE, Inc. on May 18, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-21FB	3668	05/18/91
S5-16	3673	05/18/91
S6-21	3674	05/18/91
S6-21DUP	3675	05/18/91
S6-21TB	3676	05/18/91
V140V9FS	3679	05/18/91
V140V9FB	3677	05/18/91



#### **Volatiles**

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

Samples from the W.R. Grace treatment plant were preserved with HCl. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

# II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

#### A. Initial

Initial calibration criteria were met on 5/23/91.

#### B. Continuing

Continuing calibration criteria were met on 5/28/91 with the exception of the % difference for carbon tetrachloride (actual 25.57; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/30/91.

#### IV. Blanks

The trip blank, field blanks, and method blanks were clean.

#### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.



#### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-19. The percent recoveries for 1,1-dichloroethene, benzene, and toluene were below QC criteria in the MS. Relative percent differences were above QC criteria for 1,1-dichloroethene, trichloroethene, benzene, and toluene. No positive results for these compounds were detected, so no data were qualified.

#### VII. Field Duplicates

Samples S6-21 and S6-21DUP were submitted as duplicate samples. No compounds were detected in either sample.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

#### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38



MDL (ug/L)
0.45
0.33
0.42
0.33
0.43
0.58
0.07
0.49
0.51
0.44
0.45
0.44
0.51
0.48
0.93
0.50
0.45
0.36

The concentrations of methylene chloride in Samples S5-16 and S6-21TB were below the PQL-determined MDL for this project. These results were corrected to "ND."

All other results and detection limits were acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

## XII. System Performance

System performance was acceptable.

#### XIII. Overall Assessment of Data for a Case

Methylene chloride results were corrected to "ND" in Samples S5-16 and S6-21TB.

Detection limits for aromatic compounds were estimated in all UniFirst samples.

PACE Project Number: 810518502

UNIFIRST/ENSR	PACE Project Number:	810518	
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0036688 0 0 0 2 2 05/18/91 05/18/91 S1-21 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MC Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ODIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND LJ 214191
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	D C C C C C C C C C C C C C C C C C C C
Ethyl benzene Xylene, total	ug/L ug/i,	0.5 0.5	ND ND

Method Detection Limit Not detected at or above the MDL. MDL

ND

UNIFIRST/ENSR	PACE Project Number:	810518	3502
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0036734 0 0 3 2 05/18/91 05/18/91 <u>S5-16</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 M Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ODIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND ND LKS 7/4/41 ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	D CN CN CN CN CN CN CN CN CN CN CN CN CN
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND (L.) ND (
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

Method Detection Limit Not detected at or above the MDL.

MDL ND

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PACE Project Number: 810518502

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0036742 05/18/91 0 0 0 3 05/18/91 S6-21
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND W) ELJ 9 191
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

# UNIFIRST/ENSR PACE Project Number: 810518502 PACE Sample Number: 95 Date Collected: 05 Date Received: 05 Parameter Units MDL S6-

<u>Parameter</u>	<u>Units</u>	MDL	S6-21 Dup
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED		0.5	ND
Vinyl chloride Chloroethane	ug/L ug/L	0.5 0.5	ND ND
Methylene chloride	ug/L	0.5	ND
1,1-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
	<b>.</b>		
cis-1,2-Dichloroethene	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,2-Dichloroethane	ug/L	0.5	ND
1,1,1-Trichloroethane	ug/L	0.5	ND
Carbon tetrachloride	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND /
cis-1,3-Dichloropropene	ug/L	0.5	ND
Trichloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND (
1,1,2-Trichloroethane	ug/L	0.5	ND us explained
Benzene	ug/L	0.5	ND US 25/91
trans-1,3-Dichloropropene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
Toluene	ug/L	0.5	ND W)
Chlorobenzene	ug/L	0.5	ND
Ethul honzono	ua/1	0.5	ND
Ethyl benzene	ug/L	0.5 0.5	ND _
Xylene, total	ug/L	0.5	11U

 $^{95\ 0036750}_{05/18/91}\ 0\ 0\ 0\ 4\ 1$ 

05/18/91

MDL Method Detection Limit

ND Not detected at or above the MDL.

# UNIFIRST/ENSR

PACE Project Number: 810518502

<u>Units</u>	_MDL_	95 0036769 05/18/91 0 0 0 4 5 05/18/91 S6-21 TB
ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND LTND LCS (alal ND ND ND
ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	סא מא מא מא מא מא מא מא
ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ا DN ۲۰۰ DN DN DN DN DN
ug/L ug/L	0.5 0.5	ND L
	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	ug/L 0.5 ug/L 0.5

MDL

# W. R. GRACE

PACE Project Number: 810518503

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	<u>MDL</u>	95 0036777 05/18/91 0 0 0 5 0 05/18/91 <u>V140 V9 FS</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	2.4 ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	12.1 ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND 8.2 ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

W. R. GRACE PACE Project Number: 810518503

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0036793 05/18/91 05/18/91 <u>V140 V9 FB</u>	00057
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND	
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND	
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND	

MDL



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/19/91

Chemical Analyses Performed By
PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limits in the Unifirst samples and vinyl chloride, total 1,2-dichloroethene, and trichloroethene were the only compounds detected in Grace samples. No tentatively identified compounds (TICs) were detected.

Cooler temperatures were  $7^{\rm O}{\rm C}$  and  $10^{\rm O}{\rm C}$ . It was unknown which samples (Grace or UniFirst) these temperatures pertained to. Temperatures outside the  $4^{\rm O}{\rm C}$   $\pm 2^{\rm O}{\rm C}$  range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Eight treatment system samples were collected (both Unifirst and Grace) and submitted for analysis to PACE, Inc. on May 19, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. V131V10FS was used for the field duplicate, and matrix spike/matrix spike duplicate.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
V131V10FS	3688	05/19/91
V131V10FD	3689	05/19/91
V131V10TB	3690	05/19/91
V197V10FS	3691	05/19/91
V154V10FS	3692	05/19/91
S1-22	3725	05/19/91
S1-22TB	3727	05/19/91
S4-20	3732	05/19/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

All sample analyses met holding times.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

#### A. Initial

Initial calibration criteria were met with the exception of 2-butanone which had an average RRF of 0.077 (criteria 0.1). Detection limits for 2-butanone were rejected.

# B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	RF	%D	
5/28	23:13	2-Butanone Bromomethane Acetone	0.061	(0.10) 43.8 31.0	(25) (25)
5/29	11:36	2-Butanone	0.047	(0.10) 38.7	(25)
		Bromomethane		49.2	• •
		2-Methyl-2-pent	tanone	28.7	(25)
		2-Hexanone		27.7	(25)
5/29	23:56	2-Butanone	0.041	(0.10)	
				46.3	` '
		Bromomethane		35.2	•
		2-Hexanone		27.2	(25)

# () Acceptance criteria



Detection limits for 2-butanone were rejected. All other data were not affected.

#### IV. Blanks

All blanks were acceptable with the exception of VBLK (5/30) which had tetrachloroethene detected at 4 ppb and V131V10TB which had tetrachloroethene detected at 6 ppb. Tetrachloroethene results were qualified as less than the reported value (U) in V131V10FD.

# V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

#### VI. Matrix Spike/Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within acceptance criteria.

#### VII. Field Duplicates

Vinyl chloride was detected in the sample at 280 ppb, the field duplicate at 320 ppb, in the MS at 280 ppb, and in the MSD at 300 ppb (RSD 6.5). Total 1,2-dichloroethene was detected in the sample at 830 ppb, the field duplicate at 850 ppb, in the MSD at 830 ppb, and in the MSD at 850 ppb (RSD 1.4). The data are acceptable.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

#### IX. TCL Compound Identification

Target compounds were properly identified.

# X. Compound Quantitation and Reported Detection Limits

Detection limits were acceptable with regard to the supporting data.



# XI. Tentatively Identified Compounds

No TICs were detected.

# XII. System Performance

System performance was acceptable.

# XIII. Overall Assessment of Data for a Case

Detection limits for 2-butanone were rejected.

# VOLATILE ORGANICS ANALYSIS DATA SHEET

V101V10F5

EPA SAMPLE NO.

ah Name: PACE Contract:

SDG No.:

Lab Sample ID: 3688.2

atrix: (soil/water) WATER

Cample wt/vol: 5. (g/mL) ML Lab File ID: G3176

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pach/cap) PACK

Dilution Factor: 10.00

## CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or			8	
74-87-3	Chloromethane		:	100.	: 0	:
1 74-83-9	Bromomethane		;	100.		
1 75-01-4	Vinvl Chloride		;	280.	!	
75-00-3	Chloroethane		;	100.	U	:
75-09-2	Methylene Chlori		:	50.	: U	:
67-64-1	Acetone	<u> </u>	<u>;</u>	100.	.U	
1 75-15-0	Carbon Disulfide		<u>;</u>	50.	ŀÜ	•
1 75-35-4	1,1-Dichloroethe		;	50.	١U	
75-34-3	1.1-Dichloroetha	''	:	50.	: U	i
540-59-0	1.2-Dichloroethe	ne (total)	· ;	830.	1	
	Chloroform			50.	·υ	į
107-06-2	1.2-Dichloroetha		;	50.	lU .	i
78-93-3	2-Butanone	·/	:	140	+11/2	_ ;
71-55-6	1.1.1-Trichloroe	thane	:	50.	10	:
56-23-5	Carbon Tetrachlo	ride	;	50.	ΙÜ	1
108-05-4	Vinyl Acetate		;	100.	ΙÜ	;
1 75-27-4	Bromodichloromet	hane	;	50.	ŧŪ	;
1 78-87-5	1.2-Dichloroprop	ane	;	50.	:บ	1
110061-01-5	cis-1.3-Dichloro	propene	;	50.	: U	:
79-01-6	Trichloroethene	. ,	;	410.	1	;
124-48-1	Dibromochloromet	hane	1	50.	: U	;
1 79-00-5	1.1.2-Trichloroe	thane		Šo.	:υ	:
1 71-43-2				50.	; U	;
110061-00-6	Trans-1.3-Dichlo	ropropene	:	50.	ΙU	:
1 75-25-2				50.	: U	;
	4-Methyl-2-Penta	none	;	100.	. ن	;
: 591-78-6	2-Hexanone		;	100.	:U	;
127-18-4	Tetrachloroethen		;	50.	:υ	;
1 79-34-5	1,1.2,2-Tetrachlo	proethane	!	50.	: U	:
108-88-3	Toluene		;	50.	10	:
108-90-7	Chlorobenzene		;	50.	!ប	:
100-41-4	Ethylbenzene		;	50.	١U	;
100-42-5	Styrene		:	50.	۱U	;
1330-20-7	Xvlene(total)		;	50.	: U	;
			!		. :	;

#### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

\_ab Name: PACE \_\_\_\_Contract:

SDG No.: 0002 \$ 1/17/91

atrix: (soil/water) WATER Lab Sample ID: 3688.2

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3176

evel: (low/med) LOW Date Received: 5/19/91

Moisture: not dec.100. Date Analyzed: 5/28/91

Column: (pact/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS: Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	; ; RT	EST. CONC.	
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FORM I VOA-TIC

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NU. V131V10F**D** 

Contract: 00031 ab Name: PACE

atrix: (SOil/water) WATER

CAS NO. COMPOUND

Tample wt/vol: 5. (g/mL) ML Lab File ID: G3179

Level: (low/med) LOW

Date Received: 5/19/91

Lab Sample ID: 3689.0

Moisture: not dec.100.

Date Analyzed: 5/28/91

(ug/L or ug/Kg) UG/L O

Column: (pact/cap) PACK

Dilution Factor: 10.00

## CONCENTRATION UNITS:

			<del>-</del>
;		;	
: 74-87-3	Chloromethane	100.	:U
1 74-83-9	Bromomethane	100.	: U
75-01-4-~-	Vinyl Chloride	320.	;
1 75-00-3-~-	Chloroethane	100.	١u
1 75-09-2	Methylene Chloride	1 50.	: 🖰
1 67-64-1	Acetone	100.	: U
: 75-15-0	Carbon Disulfide	50.	ŀυ
75-35-4	1,1-Dichloroethene	50.	:U
1 75-34-3	1,1-Dichloroethane	1 50.	: U
	1,2-Dichloroethene (total)		1
: 67-66-3	Chloroform	50.	ŀυ
107-06-2	1,2-Dichloroethane	50.	IU C
78-93-3	2-Butanone	180.	WR
71-55-6	1.1.1-Trichloroethane	50.	ŀU
56-23-5	Carbon Tetrachloride	50.	: U
108-05-4	Vinyl Acetate	100.	: U
75-27-4	Bromodichloromethane	50.	: U
78-87-5	1.2-Dichloropropane	50.	١U
10061-01-5	cis-1,3-Dichloropropene	50.	; U
79-01-6	Trichloroethene	420.	ł
124-48-1	Dibromochloromethane	: So.	; U
79-00-5	1,1.2-Trichloroethane	50.	; U
71-43-2	Benzene	; So.	; U
	Trans-1,3-Dichloropropene		:υ
75-25-2	Bromoform	50 <b>.</b>	: U
108-10-1	4-Methyl-1-Pentanone	100.	HU
591-78-6	2-Hexanone	100.	:U
127-18-4	Tetrachlordethene	: :: :: :: :: :: :: :: :: :: :: :: :: :	: 3 K
79-34-5	1,1.2.2-Tetrachloroethane	50.	មេ
108-88-3	Toluene	50.	¦U
108-90-7	Chlorobenzene	50.	:U
100-41-4	Ethylbenzene	50.	¦υ
100-42-5	Styrene	50.	:ប
1330-20-7	Xylene(total)	50.	:υ

## VOLATILE ORGANIUS ANALISIS DAIR SMEET TF'TATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

V131V10FD 0003 2----

SDG No.:

6/17/11

latrix: (soil/water) WATER

Lab Sample ID: 3689.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3179

evel: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Lolymo: (nach/rap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

. Number TICs found: 0

CAS NUMBER	COMPOUND NAME	1 111	: EST. CONC.	; ; ; ;
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FORM I VOA-TIC

# VOLATILE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO.

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3690.4

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3202

Level: (low/med) LOW Date Received: 5/19/91

% Moisture: not dec.100. Date Analyzed: 5/29/91

Column: (pack/can) PACk Dilution Factor: 1,00

#### CONCENTRATION UNITS:

CAS NO. COMPOUND	(ma/f or ma/ka) f		٥	
!				;
: 74-87-3Chloromethane	;	10.	: U	;
1 74-83-9Bromomethane	:	10.	_	;
1 75-01-4Vinyl Chloride	<u> </u>	10.	; U	1
75-00-3Chloroethane	<b>.</b>	10.	¦U	;
1 75-09-2Methylene Chlo	ride :	5.	¦ U	;
67-64-1Acetone		10.	¦U	;
: /5-15-0Carbon Disulfic	de:	5.	:U	1
<pre>75-35-41,1-Dichloroet</pre>	rene;	5.	:U	;
75-34-31.1-Dichloroet	ane	5.	: U	1
: 540-59-01,2-Dichloroet	mene (total);	5.	: U	;
: 67-66-3Chloroform		5.	:U	;
107-06-21.2-Dichloroet	iane :	5.	10 /	;
78-93-32-Butanone		JeT.	MK	;
: 71-55-61.1.1-Trichlore	ethane	5.	١U	;
: 56-23-5Carbon Tetrach]	oride	5.	:U	;
108-05-4Vinyl Acetate		10.	!U	;
: 75-27-4Bromodichlorome	thane	5.	١U	;
78-87-51,2-Dichloropro	pane	5.	:U	;
:10061-01-5cis-1,3-Dichlor	opropene :	5.	١U	;
79-01-6Trichloroethens		5.	יטו	;
: 124-48-1Dibromachlarome	thane	5.	:U	ł
79-00-51,1,2-Trichlord	ethane!	5.	: U	1
71-43-2Benzene		5.	: U	- }
10061-02-6Trans-1.3-Dichl	oropropene :	5.	: U	;
75-25-2Bromoform		5.	¦ U	1
108-10-14-Methyl-2-Pent	anone	10.	١U	;
591-78-62-Hexanone		10.	¦ U	;
127-18-4Tetrachloroethe	ne!	<b>б.</b>	•	-
79-34-51.1,2,2-Tetrach	loroethane:	5.	:U	:
108-88-3Toluene		5.	:U	;
108-90-7Chlorobenzene		5.	ŧυ	1
100-41-4Ethylbenzene	;	5.	: U	;
100-42-5Styrene	·	5.	: U	;
1330-20-7Xylene(total) _		5.	:U	:
			. '	- :

#### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract: V131V10T8

SDG 0 NLO 4 1

417/41

fatrix: (soil/water) WATER

Lab Sample ID: 3690.4

Sample wt/vol: 5. (g/mL) ML

Lab File ID: GS202

.evel: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/29/91

Column: (pack/gan) PACk

Dilution Factor: 1.00

CONCENTRATION UNITS: Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER :	COMPOUND NAME		EST. CONC.	: ! Ω
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FORM I VOA-TIC

## 1 A VOLATILE ORGANICS ANALYSIS DATA SHEET

V197V10F5

EPA SAMPIF NO.

\_ab Name: PACE Contract:

SDG No.:

1atrix: (SOil/water) WATER Lab Sample ID: 3691.2

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3180

Level: (low/med) LOW Date Received: 5/19/91

: Moisture: not dec.100. Date Analyzed: 5/28/91

Column: (pack/cap) PACk Dilution Factor: 10.00°

# CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

71.07.0	1	1	;
74-87-3Chloromethane	100.	١U	•
74-83-9Bromomethane	100.	U	
75-01-4Vinyl Chloride	980.		
: 75-00-3Chloroethane	100.	I U	:
: 75-09-2Methylene Chloride		:U	:
67-64-1Acetone	100.	١U	;
75-15-0Carbon Disulfide	50.	١U	;
75-35-41.1-Dichloroethene	;} 50.	١IJ	i
75-34-31.1-Dichloroethane	50.	:υ	i
540-59-01,2-Dichloroethene (total)		;	;
67-66-3Chloroform	50.	: U	;
107-06-21,2-Dichloroethane	50.	:U	- 1
1 78-93-32-Butanone	100.	HR-	- :
71-55-61,1,1-Trichloroethane	50.	١U	1
56-23-5Carbon Tetrachloride	50.	; LI	:
108-05-4Vinyl Acetate	100.	; U	1
75-27-4Bromodichloromethane	50.	; U	;
78-87-51,2-Dichloropropane	50.	١U	;
110061-01-5cis-1.3-Dichloropropene	50.	: U	;
79-01-6Trichloroethene	260.	1	- 1
124-48-1Dibromochloromethane	50.	: U	- 1
79-00-51,1,2-Trichloroethane	50.	¦U	:
; 71-43-2Benzene	50.	:U	;
10061-02-6Trans-1,3-Dichloropropene	50.	:U	- ;
75-25-2Bromoform	50.	١U	;
108-10-14-Methyl-2-Pentanone	100.	ŧυ	;
591-78-62-Hexanone	100.	:U	1
127-18-4Tetrachloroethene	50.	١U	!
79-34-51,1,2,2-Tetrachloroethane	50.	:ប	;
108-88-3Toluene	50.	:11	;
108-30-7Chlorobenzene	50.	: U	;
100-41-4Ethylbenzene	50.	: U	;
100-42-5Styrene	50.	1 11	:
1330-20-7Xylene(total)	50.	ΙU.	:
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# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Contract:

Lab Name: PACE

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3691.2

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3180

evel: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/28/91

<u>Jolumn:</u> (nach/can) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

Number TICs found: 0

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EPA SAMPLE NO.

: V154V10F\$

Lab Name: PACE Contract:

0,053 - -----

6/17/91

Matrix: (soil/water) WATER

Lab Sample ID: 3692.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3181

cevel: (low/med) LOW

Date Received: 5/19/91

! Moisture: not dec.100.

Date Analyzed: 5/28/91

Column: (pact/cap) PACk

Dilution Factor: 5.00

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CAS NO.	COMPOUND	(ug/L or ug		Ω	
; 74-87-3	Chloromethane		; ; 50.	: ¦∪	; ;
74-83-9	Bromomethane		50.	10	;
75-01-4	Vinyl Chloride	<b>_</b>	50.	١U	1
1 75-00-3	Chloroethane		50.	:υ	;
75-09-2	Methylene Chlor	.ide	1 25.	١U	;
67-64-1	Acetone		50.	: U	1
1 75-15-0	Carbon Disulfic	le	: 25.	;U	:
75-35-4	1.1-Dichloroeth	iene	1 25.	:U	;
75-34-3	1,1-Dichloroeth	ane	; 25.	; U	:
	1.2-Dichloroeth			1	;
67-66-3	Chloroform		15.	; U	1
107-06-2	1.2-Dichloroeth	ane	1 25.	١U	:
1 78-93-3	2-Butanone		5er.	LUR	;
71-55-6	1,1,1-Trichlord	ethane	25.	; U	;
56-23-5	Carbon Tetrachl	oride	25.	١U	!
108-05-4	Vinyl Acetate _		50.	(IJ	;
75-27-4	Bromodichlorome	thane	25.	¦ U	;
78-87-5	1,2-Dichloropro	pane	25.	١U	;
110061-01-5	cıs-1,3-Dıchlor	opropene:	25.	: U	;
79-01-6	Trichloroethene	;	360.	;	:
124-48-1	Dibromochlorome	thane:	25.	: ប	;
1 79-00-5	1,1,2-Trichloro	ethane	25.	; U	:
1 71-43-2	Benzene	!	25.	!U	:
110061-02-6	Trans-1,3-Dichl	oropropene:		:U	}
	Bromoform	;	25.	: U	:
108-10-1	4-Methyl-2-Pent	anone:	50.	: U	;
\$ 591 <i>-78-6</i>	2-Hexanone	:	50.	; U	;
127-18-4	Tetrachloroethe	ne:	25.	¦ U	!
1 79-34-5	1,1,2.2-Tetrach	loroethane:	25.	; U	;
108-88-3	Toluene	!	25.	:U	1
108-90-7	Chlorobenzene _		25.	: U	:
100-41-4	Ethylbenzene	:	25.	ŧυ	:
100-42-5	Stvrene		25.	١U	-
1330-20-7	Xylene(total) _		25.	١U	;
 				_ !	_;

## VOLATILE URGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V154V10F5

Lab Name: PACE

, Contract:

00054 No.:

atrix: (soil/water) WATER

Lab Sample ID: 3692.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3181

evel: (low/med) LOW

Date Received: 5/19/91

" Moisture: not dec.100.

Date Analyzed: 5/28/91

Jalumo: (pack/cap) PACk

Number TICs found: 0

Dilution Factor: 5.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME		EST. CONC.	. 0
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# VOLATILE ORGANICS ANALYSIS DATA SHEET

! S1 -22

EPA DAMINE HU.

ab Name: PACE

Contract:

1----1

atrix: (soil/water) WATER

Lab Sample TD: 3725.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3182

Level: (low/med) LOW

Date Peceived: 5/19/91

Moisture: not dec.100.

Date Analyzed: 5/08/91

Column: (pac)/cap) PACk

Dilution Factor: 20.00

CONCENTRATION UNITS:	CONCE	NTRATION	UNITS:
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CAS NO	COMPOUND	(ug/L or			Ω	
						· <b>-</b> ;
74-E	37-3Chloromethane		;	200.	; U	1
1 74-8	3-9Bromomethane		!	200.	ΙU	!
75-0	1-4Vinyl Chloride		!	200.	÷U	;
75-0	0-3Chloroethane		!	200.	١U	;
75-0	9-2Methylene Chlori	de	;	100.	(U	:
: 67-6	4-1Acetone		;	23.	; J	;
75-1	5*0Carbon Digulfide		:	100.	١U	<b>i</b> 1
; 75-3	5-41.1-Dichloroethe	ne	;	100.	ŧυ	:
75-3	4-31.1-D1chloroetha	ne	1	100.	ŧυ	!
540-5	9-01.2-Dichloroethe	ne (total)	!	100.	ΙU	;
£7-6	6-3Chloroform		:	100.	:U	:
107-0	6-21,2-Dichloroetha	ne	;	100.	:IJ.,	;
: 78-9	3-32-Butanone		!	200.	HIR	1
1 71-5	5-61.1,1-Trichloroe	thane	;	100.	:U	;
: 56-2	3-5Carbon Tetrachlo	rıde	;	100.	ŀυ	}
108-0	5-4Vinyl Acetate		;	200.	¦ U	- 1
75-2	7-4Bromodichloromet	rane	:	100.	: U	1
1 78-8	7-51,2-Dichloropropa	ane	;	100.	:U	1
110061-0	1-5cis-1,3-Dichloro	oropene	;	100.	111	!
79-0	1-6Trichloroethene			100.	ΙU	1
124-40	B-1Dibromochlorometh	iane	1	100.	ŧU	1
1 79-00	0-51.1.2-Trichloroet	thane	;	too.	:13	!
71 -43	3-2Benzene		;	100.	: U	:
: 100E1 =0.	2-6Trans-1.3-Dichlor	ropropene	;	100.	<b>{1}</b>	:
1 75-25	5-2Bromoform		!	100.	¦U	:
108-10	)-14-Methv1-2-Pentar	none	;	200.	:U	i
591-78	3-62-Hexanone		{	200.	(U	:
1 127-18	3-4Tetrachloroethene		!	3300.	18	; Cre
; 79-3-	4-51,1,2,2-Tetrachlo	proethane _	_ ;	100.	! U	192191
108-88	3-3Toluene		_ !	100.	: U	;
108-90	)-7Chlorobenzene		_ ;	100.	:U	•
100-41	-4Ethylbenzene		!	100.	! ប	:
100-41	:-5Styrene		_ {	100.	: ប	:
1330-20	)-7Xvlene(total)		_ ;	100.	:U	!
 			_ !		. :	, ;

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

51-20 |

Lab Code: PACF Case No.: EPC SAS No.: SDG No.:

00123

Matrix: (soil/water) WATER

Number TICs found: 0

Lab Sample ID: 3725.0

Sample wt/vol: 5. (g/mL) ML

Lab File ID: 63182

Date Received: 5/19/91

\_evel: (low/med) LOW

% Moisture: not dec.100.

Date Analyzed: 5/28/91

Dilution Factor: 20.00

Column: (back/cap) PACK

CONCENTRATION UNITS:

(ug/L or ug/kg) UG/L

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CAS NUMBER	COMPOUND NAME	, : RT :	EST. CONC.	. o :
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EPA SAMPLE NO.

: S1-22TB

Contract: .ab Name: PACE

'----'

Matrix: (soil/water) WATER Lab Sample ID: 3727.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3217

Level: (low/med) LOW Date Received: 5/19/91

: Moisture: not dec.100. Date Analyzed: 5/30/91

Column: (pact/cap) PACE Dilution Factor: 1.00

# CONCENTRATION UNITS:

CAS NO.		concentration on		Ω	
74-87-3	Chloromethane	i !	10.	; ; U	<b>;</b>
1 74-83-9	Bromomethane		10.		i
1 75-01-4	Vinyl Chloride		10.	. –	
1 75-00-3	Chloroethane	1	10.	_	
1 75-09-2	Methylene Chlorid	= ;	5.	Ü	
1 67-64-1	Acetone	!	10.	iŪ	
1 75-15-0	Carbon Disulfide_	!	5.	:υ	:
1 75-35-4	1.1-Dichloroethen	2 !	٩.	ΙÜ	:
1 75-34-3	1.1-Dichloroethane	=	5.	١U	:
1 540-59-0	1.2-Dichloroethene	(total)	5.	; U	:
1 67-66-3	Chloroform	;	5.	; U	1
1 07-06-2	1.2-Dichloroethane	<u> </u>	5.	10.	:
1 78-93-3	2-Butanone	·	147.	MR	:
1 71-55-6	1,1.1-Trichloroeth	nane	5.	:U	;
: 56-23-5	Carbon Tetrachlors	.de;	5.	l U	:
108-05-4	Vinyl Acetate	:	10.	: U	1
1 75-27-4	Bromodichlorometha	ne	5.	١u	:
! 78-87-5	1,2-Dichloropropar	ne	5.	١U	;
110061-01-5	cis-1.3-Dichloropr	opene	5.	: U	;
79-01-6	Trichloroethene		5.	¦U	1
124-48-1	Dibromochlorometha	ine!	5.	: U	1
79-00-5	1.1,2-Trichloroeth	ane	5.	:U	:
71-43-2	Benzene		5.	: U	;
10061-02-6	Trans-1.3-Dichlord	propene :	5.	:U	;
75-25-2	Bromoform	;	5.	;U	;
108-10-1	4-Methyl-2-Pentano	ine :	10.	113	:
591-78-6	2-Hexanone	· •	10.	¦U	;
127-18-4	Tetrachloroethene		5.	ŀU	;
79-34-5	1.1,2.2-Tetrachlor	cethane!	5.	ŧυ	;
108-88-3	Toluene	1	5.	:U	:
108-90-7	Chlorobenzene	;	5.	; U	;
100-41-4	Ethylbenzene		5.	١U	;
100-42-5	Styrene		5.	١Ü	;
1330-20-7	Xylene(total)		5.	เบ	:
					;

# TENTATIVELY IDENTIFIED COMPOUNDS

Mab Name: PACE

Contract:

Matrik: Soil (Water) WATER

Lab Sample ID: 3737.7

mample wt/vol: 5. (p/ml) ML Lab File ID: 63217

evel: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/30/91

plumn: (pack/cap) PACk

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME		:   EST. CONC.	0
1			!	;;
		,		;
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7.5		;	!	
30				
		:		:

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3732.3

Sample wt/vol: 5. (g/mL) ML

Lab File ID: G3186

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5/09/91

Column: (pact/capt PACE

Dilution Factor: 10.00

CONCE	NTRATION	HINTTG.
	14 1 1/10 1 1 1014	CONTRACT

J.	COMPOUND	riig/L or	ng/kg)	UG/L	O

CAS NO.	COMPOUND	(ug/L or ug/kg)		O	
;				1	1
1 74-87-3	Chloromethane _		100.		;
	Bromomethane		100.	!U	:
1 75-01-4	Vinyl Chloride_		100.	: U	;
1 75-00-3	Chloroethane		100.	!U	;
75-09-2	Methylene Chlor	ide;	50.	; U	;
67-64-1	Acetone	;	34.	; J	1
1 75-15-0	Carbon Disulfid	e;	50.	: U	;
75-35-4	1.1-Dichloroeth	ene:	50.	: U	:
1 75-34-3	1.1-Dichloroeth	ane :	50.	; U	;
1 540-59-0	1.2-Dichloroeth	ene (total)	50.	11)	;
1 67-66-3	Chloroform	!	50.	:U	;
3 107-06-2	1.2-Dichloroeth	ane;	50.	:U ,	;
1 78-93-3	2-Butanone		un.	HTR	ł
71-55-6	l.1.1-Trichloro	ethane :	50.	:U	;
: 56-23-5	Carbon Tetrachle	oride :	50.	; LI	;
108-05-4	Vinyl Acetate _	;	100.	: U	1
: 75-27-4	Bromodichlorome	thane	50.	l U	;
78-87-5	1.2-Dichloroprop	pane;	50.	:U	;
110061-01-5	cis-1,3-Dichlore	opropene :	50.	!U	;
79-01-6	Trichloroethene	;	50.	: U	}
124-48-1	Dibromochloromet	thane :	50.	: 🖰	1
1 79-00-5	1,1,2-Trichloroe	ethanel	50.	:u	;
1 71-43-2	Benzene	:	50.	: U	;
110061-02-6	Trans-1.3-Dichlo	ropropene:	50.	:U	1
1 75-25-2	Bromoform	;	50.	: u	i
108-10-1	4-Methyl-2-Penta	anone :	100.	:ប	;
: 591-78-6	2-Hevanone	;	100.	:υ	1 14
127-18-4	Tetrachloroether	ne;	2000.	: A	
1 79-34-5	1.1.2.2-Tetrachl	orcethane !	50.	30	: 61
	Toluene		50.	(1)	, "
108-90-7	Chlorobenzene		50.	; U	;
100~41-4	Ethylbenzene		50.	:U	!
100-42-5	Styrene		50.	: U	ļ
1330-20-7	Xylene(total)		50.	: U	:
	· • • • • • • • • • • • • • • • • • • •		J., .	1	

# VULHITLE URBANIES MIMELISTS PHIM SHELL

TENTATIVELY IDENTIFIED COMPOUNDS

54-70

Lab Name: PACE

~Contract:

SDG No.: 00135

Lab Code: PACE Case No.: EPC SAS No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3732.3

Sample wt/vol: 5. (g/ml) ML Lab File ID: G3186

Level: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Analyzed: 5'29/91

Tolumn: (pack/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/kg) UG/L

1		 !		 !
: CAS NUMBER	COMPOUND NAME	L RT :	EST. CONC.	. Q :
=====================================	=======================================	=======		!====:
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1 3				!:
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FORM I VOA-TIC

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# DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEMS

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/19/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Detection limits for aromatic compounds were estimated in UniFirst samples.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Case Narrative

Eight samples were collected and submitted to PACE, Inc. on May 19, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
V140V10FS	3684	05/19/91
V140V10FD	3685	05/19/91
V140V10FB	3686	05/19/91
V140V10TB	3687	05/19/91
S1-22FB	3728	05/19/91
S5-17	3733	05/19/91
S6-22	3734	05/19/91
S6-22TB	3736	05/19/91



## Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



# I. Holding Times

Samples from the W.R. Grace treatment plant were preserved with HCl and catalase. Holding times were met for all W.R. Grace samples.

Samples from the UniFirst treatment plant were apparently not preserved. All UniFirst samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time for samples. Detection limits for aromatic compounds were qualified as estimated for all UniFirst samples.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Peaks were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive sample data were affected.

#### A. Initial

Initial calibration criteria were met on 5/23/91.

## B. Continuing

Continuing calibration criteria were met on 5/29/91.

## IV. Blanks

The trip blanks, field blanks, and method blanks were clean.

## V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.



# VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample V140V10FS. The Relative percent difference was above QC criteria for 1,1-dichloroethene. No positive results for this compound were detected, so no data were qualified.

## VII. Field Duplicates

Samples V140V10FS and V140V10FD were submitted as duplicate samples. Compounds and concentrations (in ug/L) reported were as follows:

Compound	<u>V140V10FS</u>	<u>V140V10FD</u>	<u>MS</u>	MSD
Chloroethane	1.5	1.7	1.6	1.5
cis-1,2-Dichloroethene Trichloroethene	0.9 0.6		1.2 NA	NA

Since trichloroethene is one of the spiking compounds, trichloroethene results for the MS and MSD were not applicable to the duplicate analysis.

Chloroethane results were acceptable as reported. Results for cis-1,2-dichloroethene and trichloroethene were rejected in V140V10FS.

#### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

# IX. TCL Compound Identification

TCL compound identifications were acceptable.

# X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:



Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
·Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

The concentrations of methylene chloride in Sample S6-22TB was below the PQL-determined MDL for this project. This result was corrected to "ND."

The result for 1,1,1-trichloroethane in Sample S5-17 (30 ug/L) was beyond the calibration range of the instrument. This result met precision and accuracy criteria and was acceptable as reported.

All other results and detection limits were acceptable with regard to the supporting data.

# XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.



# XII. System Performance

System performance was acceptable.

# XIII. Overall Assessment of Data for a Case

The methylene chloride result in Sample S6-22TB was corrected to "ND."  $\,$ 

Detection limits for aromatic compounds were estimated in all UniFirst samples.

Results for trichloroethene and cis-1,2-dichloroethene were rejeted for Sample V140V10FS.

# W. R. GRACE

# PACE Project Number: 080 05 39 200

PACE Sample Number: Date Collected: Date Received:			95 00 05/11 05/11 V140	9/91
<u>Parameter</u>	<u>Units</u>	MDL	FS	
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND 1.5 ND ND ND ND	•
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND	2/1/9/10
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND	
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ПЛ ПП	

MDL

Method Detection Limit Not detected at or above the MDL. ND

# PACE Project Numbers 810519500

# W. R. GRACE

PACE Sample Number: Date Collected: Date Received:			95 0036858 05/19/91 05/19/91 V140 V10
<u>Parameter</u>	<u>Units</u>	MDL	FD
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethane 1,1-Dichloroethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND 1.7 ND ND ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

# W. R. GRACE

PACE Project Number: 810519500 00040

PACE Sample Number: Date Collected: Date Received:			95 0036866 05/19/91 05/19/91 V140 V10
<u>Parameter</u>	<u>Units</u>	MDL	<u>F8</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIE Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	D ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND - ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

# W. R. GRACE

PACE Project Number: 810519500 0 4 4

PACE Sample Number: Date Collected: Date Received:			95 0036874 05/19/91 05/19/91 V140 V10
<u>Parameter</u>	<u>Units</u>	MDL	TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFY Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 Ú.5	ND ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

UNIFI	RS17	ENS	K
PACE			

PACE Project Number: 810519501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0037285 05/19/91 05/19/91 S1-22 FB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethane 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND W EX SAN HARI
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethyl benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5 0.5	ND ND ND (A) ND (ND ND )
Xylene, total	ug/L	0.5	ND

MDL Method Detection Limit

ND Not detected at or above the MDL.

# UNIFIRST/ENSR

PACE Project Number: 810519501

PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	MDL	95 0037331 05/19/91 05/19/91 <u>S5-17</u>
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MC Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ODIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND 1.7 3.2 ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND 30 ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND ND ND ND ND ND ND ND N
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( ) D ( )
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

UNIFIRST/ENSR	PACE Project Number:	810519	501
PACE Sample Number: Date Collected: Date Received: <u>Parameter</u>	<u>Units</u>	<u>MDL</u>	95 0037340 05/19/91 05/19/91 <u>\$6</u> -22
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MO Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	DIFIED  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L  ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND UJ EFS 19191
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND KJ ND ND ND ND ND
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

PACE Project Number: 810519501

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	_MDL_	95 0037366 05/19/91 05/19/91 S6-22 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride l,l-Dichloroethene l,l-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND LZND ET 119/10 ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND W
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND WI ND I
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND   ND

Method Detection Limit Not detected at or above the MDL. MDL ND



# DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA Samples Collected May 19, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in Samples V131S10FS, V131S10FD, V131S10FB, or V140S10FS. No tentatively identified compounds were observed in any of the samples in this SDG. Results for 4-nitroaniline and 3,3'-dichlorobenzidine are rejected in all four samples. Detection limits for 3-nitroaniline are estimated in all four samples. The detection limit for pyrene is estimated in V131S10FS, V131S10FD, and V131S10FB.

Problems identified on the Chain of Custody (COC) records include: (1) 7 COC's are included although only 1 is pertinent to this data package; (2) affiliations are not included with any of the transfer signatures; (3) the signature of the sampler at the top of the form includes only a first initial—the full name should be signed here; (4) cold storage of the samples is not documented; and (5) separate entries should not be made for MS/MSD samples.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present.)

UJ - The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data package to qualify some of the results as appropriate based on the findings of the data review.



## Case Narrative

Six water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 19, 1991 and received by Pace, Inc. on the same date. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

Client ID	<u>Lab ID</u>	Collection Date		
V131S10FD	3695	5/19/91		
V131S10FS	3694	5/19/91		
V131S10FB	3696	5/19/91		
V140S10FS	3693	5/19/91		

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810519.500.



# Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were placed in cold storage in the field, at the time of collection. It can be inferred that the samples were placed in coolers from the notations of cooler temperatures made on 5/20/91 on the COC's. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No internal standard (IS) or surrogate peaks were manually integrated; data do not appear to be affected.

### A. Initial

All samples in this SDG were analyzed under an initial calibration (IC) performed on 6/19/91. All criteria were met for this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 4-chloroaniline (37.5), 3-nitroaniline (41.4), and 3,3'-dichlorobenzidine (44.7). No data are affected.

# B. Continuing

The samples in this SDG were run under two continuing calibration (CC) standards, on 6/20/91 and 6/21/91. Criteria were met for the 6/20 calibration with the exception of the RF's for 4-nitroaniline (0.046) and 3,3'-dichlorobenzidine (0.033), both of which were below the minimum required RF of 0.05, and the %D for 3,3'-dichlorobenzidine (56.2), 2,4-dinitrophenol (43.8), 4-nitroaniline (45.4), 3-nitroaniline (56.9), and pyrene (50.7). Results for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in Samples V131S10FS, V131S10FD, and V131S10FB; detection limits



for 3-nitroaniline and pyrene are estimated "UJ" in the same three samples.

All criteria were met in the 6/21/91 calibration except the RF's for 4-nitroaniline (0.045) and 3,3'-dichlorobenzidine (0.048), and the %D for 3-nitroaniline (64.2), 2,4-dinitrophenol (43.8), 2,4-dinitrotoluene (26.6), 4-nitroaniline (46.4), and 3,3'-dichlorobenzidine (36.8). Results for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in Sample V140S10FS, and detection limits for 3-nitroaniline were estimated in this sample.

### IV. Blanks

No target or tentatively identified compounds were detected in SBLK1, extracted 5/24 and analyzed 6/21.

No target compounds or reportable TIC's were detected in the field blank, V131S10FB.

## V. Surrogate Recovery

Form II contains two listings for V131S10FD and no listing for V131S10FB; based on comparison to the raw data, it is clear that entry #5 should be identified as V131S10FB.

Surrogate recoveries were within established QC criteria except for 2-fluorobiphenyl in V131S10FS and the MSD of this sample; both of these were low (34% and 40%, respectively) relative to the acceptable QC range of 43-116%. Recoveries in the paired field duplicate (V131S10FD) were consistently higher, and the reported results are the same for both samples. No data are qualified on this basis.

# VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample V131S10FS. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within established QC criteria except %R for acenaphthene in MS (43%, QC 46-118%) and RPD for pyrene (41%, QC 31%). Pyrene has already been estimated in the unspiked sample V131S10FS; no additional qualifiers are applied.

## VII. Field Duplicates

Samples V131S10FS and V131S10FD were field duplicates. No target analytes or TIC's were detected in these samples.



### VIII. Internal Standards Performance

On Form VIII, there are two entries for Sample V131S10FS and no entry found for V131S10FB; based on review of internal standard areas in the raw data, it has been determined that entry #5 actually represents the field blank, V131S10FB.

All internal standard areas and retention times were within the established QC limits for acceptance in Samples V131S10FD and V131S10FB. In V131S10FS and the MS/MSD, one or more IS areas are outside the QC criteria on the <a href="high side">high side</a>. This may be related to a distinct <a href="https://drop.noted.com/drop.noted">drop.noted</a> in the areas of the later-eluting IS peaks between the IC standards and the CC standards. No reruns were performed. Sensitivity does not appear to be seriously affected, and no positive results are reported for these samples; no data are qualified on this basis. It is recommended that the laboratory investigate this variability in IS areas.

## IX. TCL Compound Identification

No TCL compounds were identified in any of the samples in this SDG.

## X. Compound Quantitation and Reported Detection Limits

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

## XI. Tentatively Identified Compounds

No tentatively identified compounds were reported in any of the samples in this SDG.

# XII. System Performance

No system performance problems were observed in the raw data presented in this data package, with the possible exception of the variable IS areas observed for the later-eluting IS peaks between the IC standards and the CC standards. Specifically:

Area-IS#5	<u> Area-IS#6</u>
160420	101222
	48767
	73694
174429	112175
126733	79752
	160428 79274 134463 174429



CC Std-6/20/91 CC Std-6/21/91 65645 87424

32522 56939

Recommend that the laboratory watch these areas closely in future work to avoid problems with quantitative data that may be generated.

# XIII. Overall Assessment

Sample results are usable as reported with the following exceptions:

- 1. CRQLs for 4-nitroaniline and 3,3'-dichlorobenzidine are rejected in all samples due to low RF's.
- 2. Detection limits for 3-nitroaniline are estimated in all samples due to a high %D in both continuing calibrations; detection limits for pyrene are estimated in V131S10FS, V131S10FD, and V131S10FB due to a high %D in the first continuing calibration.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:

- 1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.
- 2. Transfer signatures are incomplete: the affiliation of the person involved is not included for any of the signatures.
- 3. The signature and the written name of the sampler at the top of the form should be a <u>full</u> name, not first initial only.
- 4. Cold storage is not documented, except for references to cooler temperatures added to the COC's on 5/20/91.
- 5. MS/MSD analyses are a <u>laboratory-initiated</u> quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.

# 1B SEMIVOLAT LE ORGANICS ANALYSIS DATA SHEET

ab Name: PACE Contract: V131S10F\$ 8

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

atrix: (soil/water) WATER Lab Sample ID: 3696.3

sample wt/vol: 1000. (g/mL) ML Lab File ID: D2763

evel: (low/med) LOW Date Received: 5/19/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91

Lxtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91

C'C Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND (U	g/L or ug/i	(g) (G/L	Q
108-95-2	Phenol		10.	U
111-44-4	bis(2-Chloroethyl)et	her	10.	U
95-57-8	2-Chlorophenol		10.	บ
541-73-1	1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzyl alcohol		10.	U
106-46-7	1,4-Dichlorobenzene		10.	U
100-51-6	Benzvl alcohol		10.	U
95-50-1	1.2-Dichlorobenzene		10.	Ū
95-48-7	2-Methylphenol		10.	U
108-60-1	bis/2-Chloroisopropy	lether	10.	Ū
106-44-5	4-Methylphenol		10.	Ü
621-64-7	N-Nitroso-di-n-propy	lamine	10.	Ü
67-72-1	Hexachloroethane		10.	Ü
98-95-3	Nitrobenzene		10.	Ü
78-59-1	Isophorone		10.	Ü
88-75-5	2-Nitrophenol		10.	Ü
105-67-9	2,4-Dimethylphenol		10.	Ū
65-85-0	Benzoic acid		50.	Ū
111-91-1	bis(2-Chloroethoxy)m	ethane	10.	Ū
120-83-2	2,4-Dichlorophenol		10.	Ū
120-82-1	1,2,4-Trichlorobenze	ne	10.	Ū
91-20-3	Naphthalene		10.	Ü
106-47-8	4-Chloroaniline		10.	บั
87-68-3	Hexachlorobutadiene		10.	Ü
59-50-7	4-Chloro-3-methylphe	701	10.	Ü
91-57-6	4-Chiolo-3-methylphe		10.	Ü
77=47-4	2-Methylnaphthalene Howachlorocyclopenta	<del></del>	10.	ן ט ו ט
88-06-2	2,4,6-Trichloropheno		10.	Ü
95-95-4	2,4,6-111ch1010pheno	<del>,</del>	50.	Ü
91-59-7	2-Chloronaphthalene	<u> </u>	10.	Ü
88-74-4	2-Chioronaphchaiene 2-Nitroaniline		50.	Ü
171-11-2	Dimothylmhthalata		10.	ט
TOT-TT-2	Dimethylphthalate			
200-06 0				
208-96-8	Acenaphthylene 2,6-Dinitrotoluene		10. 10.	U U

EPA SAMPLE NO.

Tab Name: PACE Contract:

00024

V131S10F 6

ab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3696.3

sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2763

evel: (low/med) LOW

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

1 :traction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

Date Received: 5/19/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND

(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND (dg/L 8f d	g/kg) 0G/L		
83-32-9 51-28-5 100-02-7 132-64-9	3-NitroanilineAcenaphthene2,4-Dinitrophenol4-NitrophenolDibenzofuran	10. 50. 50.	U U U U U	
84-66-2 7005-72-3 86-73-7 100-01-6	2,4-DinitrotolueneDiethylphthalate4-Chlorophenyl-phenyletherFluorene4-Nitroaniline	10. 10. 10.		
86-30-6 101-55-3 118-74-1 87-86-5	4,6-Dinitro-2-methylphenol_ N-Nitrosodiphenylamine 4-Bromophenyl-phenylether Hexachlorobenzene Pentachlorophenol	10. 10. 10. 50.	7 7 8 9 9	cae 7/5/9
120-12-7 84-74-2 206-44-0 129-00-0	PhenanthreneAnthraceneDi-n-butylphthalateFluoranthenePyrene	10.   1 10.   1 10.   1 10.   1	+ n2	-
91-94-1 56-55-3 218-01-9 117-81-7	bis(2-Ethylhexyl)phthalate	,	7	
117-84-0== 205-99-2 207-08-9 50-32-8	Di-n-octylphthalateBenzo(b)fluorantheneBenzo(k)fluorantheneBenzo(a)pyrene	10.   T	ן ו	
53-70-3 191-24-2	Indeno(1,2,3-cd)pyreneDibenzo(a,h)anthraceneBenzo(g,h,i)perylene separated from diphenylamine	10.	,	

FORM I SV-2

1/87 Rev.

EPA SAMPLE NO.

SEMIVOLAT 'E ORGANICS ANALYSIS DATA SHEET TEN\_..TIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

V131S10F\$ 8

\_ab Code: PACE

Case No.: EPC SAS No.:

00025

! itrix: (soil/water) WATER

Lab Sample ID: 3696.3

SDG No.:

>ample wt/vol:

1000. (g/mL) ML

Lab File ID: D2763

: vel: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

! traction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found:

**CONCENTRATION UNITS:** (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	4
1				
2 3				
5. 6.				
7				
9.				
11				
_3				
5.				
17. 18.				
9.				
21.				
3				
25.				
7.				
29.				

### SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Confe flate 2:9 ab Name: PACE

**V131S1FD** V131510FD

ab Code: PACE Case No.: EPC SAS No.:

SDG No.:

matrix: (soil/water) WATER

Lab Sample ID: 3695.5

ample wt/vol:

1000. (g/mL) ML

Lab File ID: D2757

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

Q

108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1.3-Dichlorobenzene	10.	ט
106-46-7	1.4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	ט
95-50-1	1.2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	bis(2-Chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	ับ
88-75-5	2-Nitrophenol	10.	U
105-67-9	2.4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	ט
120-82-1	1.2.4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	Ū
77-47-4	Hexachlorocyclopentaglene	ıŭ.	Ü
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2.4.5-Trichlorophenol	50.	Ū
91-58-7	2-Chloronaphthalene	10.	Ŭ
88-74-4	2-Nitroaniline	50.	Ū
131-11-3	Dimethylphthalate	10.	Ū
208-96-8	Acenaphthylene	10.	บ
606-20-2	Acenaphthylene	10.	Ū

10 SEMIVOLA LE ORGANICS ANALYSIS DATA SHEET

ab Name: PACE

Case No.: EPC

**V131S1FD** V131510 FD

SAS No.:

SDG No.:

FUI 6/25/4,

atrix: (soil/water) WATER

Lab Sample ID: 3695.5

Sample wt/vol:

Lab Code: PACE

1000. (g/mL) ML

Lab File ID: D2757

evel: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100.

dec. 0.

Date Extracted: 5/24/91

Lxtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

CAS NO.

COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

		······································		
99-09-2	3-Nitroaniline	50.	U	
83-32-9	Acenaphthene	10.	Įΰ	j
51-28-5	2.4-Dinitrophenol	50.	U	]
100-02-7	4-Nitrophenol	50.	U	ĺ
132-64-9	Dibenzofuran	10.	ט	ļ
	2,4-Dinitrotoluene	10.	U	ļ
84-66-2	Diethylphthalate	10.	ប	1
7005-72-3	4-Chlorophenyl-phenylether	10.	U	ļ
86-73-7	Fluorene	10.	U	]
	4-Nitroaniline	<del>-50.</del>	<del> </del> ₩ 'R'	Ì
	4,6-Dinitro-2-methylphenol	50.	ט	j
86-30-6	N-Nitrosodiphenylamine	10.	ט	
101-55-3	4-Bromophenyl-phenylether	10.	U	
118-74-1	Hexachlorobenzene	10.	ט	cae,
87-86-5	Pentachlorophenol	50.	ן ט	7/5/9
85-01-8	Phenanthrene	10.	ן ט	4/5//
120-12-7	Anthracene	10.	ן ט	
84-74-2	Di-n-butylphthalate	10.	ט	!
206-44-0	Fluoranthene	10.	U	_
129-00-0	Pyrene	10.	to W	
85-68-7	Butylbenzylphthalate	10.	U	
91-94-1	3.3'-Dichlorobenzidine	20.	<del> v</del>	,
56-55-3	Benzo(a) anthracene	10.	ט	
218-01-9	Chrysene	10.	ן ט	
117-81-7	bis(2-Ethylhexyl)phthalate_	10.	ט ו	
117-84-0	Di-n-octylphthalate	10.	ן ט	
205-99-2	Benzo(b) fluoranthene	l 10.	ו עו	
207-08-9	Benzo(k) fluoranthene	10.	ט	
50-32-8	Benzo(a)pyrene	10.	U	
193-39-5	Indeno(1,2,3-cd)pyrene	10.	ט	
53-70-3	Dibenzo(a,h)anthracene	10.	U	
	Benzo(g,h,i)perylene	10.	וט ו	

FORM I SV-2

FPA SAMPLE NO.

### SEMIVOLA'. LE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

1b Name: PACE

Contract:

V131510F0

ab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

Ma/ 6/25/41

latrix: (soil/water) WATER

Lab Sample ID: 3695.5

Sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2757

evel: (low/med) LOW

% Moisture: not dec.100.

dec.

Date Received: 5/19/91

Date Extracted: 5/24/91

Lxtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

CC Cleanup:

(Y/N) N

7.0 pH:

0.

Dilution Factor:

1.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1		-	- <del></del>	
4. — –				
6				
7.				
10.				
12.		_		
13 14 15				
16. 17.				
18.				
19. 20. 21.				
22.				
24.				
26.				
29.				
30				

### SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

V131S10F5

.ab Name: PACE Contract: 00035

ab Code: PACE Case No.: EPC SAS No.:

SDG No.:

141

Matrix: (soil/water) WATER

Lab Sample ID: 3694.7

6/25/91

ample wt/vol:

1000. (g/mL) ML

Lab File ID: D2760

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

\_PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/L

		(49/101 49/10		
108-95-2	Phenol		10.	U
111-44-4	bis(2-Chloroeth	vl)ether	10.	U
95-57-8	2-Chlorophenol		10.	Ū
541-73-1	1.3-Dichloroben	zene	10.	U
106-46-7	1,4-Dichloroben:	zene	10.	U
100-51-6	Benzyl alcohol_		10.	ט
95-50-1	1.2-Dichloroben	zene	10.	U
95-48-7	2-Methylphenol_		10.	U
108-60-1	bis(2-Chloroison	propyl)ether	10.	U
106-44-5	4-Methylphenol_		10.	U
621-64-7	N-Nitroso-di-n-r	propylamine	10.	U
67-72-1	Hexachloroethane		10.	U
98-95-3	Nitrobenzene		10.	U
78-59-1	Isophorone		10.	U
88-75-5	2-Nitrophenol		10.	U
105-67-9	2,4-Dimethylpher	IoI	10.	U
65-85-0	Benzoic acld		50.	U
111-91-1	bis(2-Chloroetho	xy) methane	10.	U
120-83-2	2.4-Dichlorophen	ol	10.	U
120-82-1	1.2.4-Trichlorob	enzene	10.	U
91-20-3	Naphthalene		10.	U
106-47-8	4-Chloroaniline		10.	U
87-68-3	Hexachlorobutadi	ene	10.	U
59-50-7	4-Chloro-3-methv	lphenol	10.	U
91-57-6	2-Methvlnaphthal	ene	<u> 10</u> ,	U
77-47-4	Hexachlorocyclop	entadiene	10.	U
88-06-2	2,4,6-Trichlorop	henol	10.	U
95-95-4	2,4,5-Trichlorop	henol	50.	U
91-58-7	2-Chloronaphthal	ene	10.	U
88-74-4	2-Nitroaniline		50.	U
131-11-3	Dimethylphthalat	e	10.	U
208-96-8	Acenaphthylene		10.	U
606-20-2	2,6-Dinitrotolue	ne	10.	U

SEMIVOLA'. LE ORGANICS ANALYSIS DATA SHEET

V131S10F5 Lab Name: PACE Contract:

00036 SAS No.:

SDG No.:

mI

FPA SAMPLE NO.

4atrix: (soil/water) WATER

Lab Sample ID: 3694.7

1000. (g/mL) ML Lab File ID: D2760

\_evel: (low/med) LOW

Sample wt/vol:

Date Received: 5/19/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

;PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

99-09-23-Nitroaniline	CAS NO.	COMPOUND (49/1 Of 49	J/Kg) OG/L	Q	
83-32-9	99-09-2	3-Nitroaniline	50.	U	
S1-28-52,4-Dinitrophenol   S0.   U			<b>-</b> 1	ĺΰ	
100-02-74-Nitrophenol   10. U   132-64-9Dibenzofuran   10. U   121-14-22,4-Dinitrotoluene   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10. U   10.	51-28-5	2,4-Dinitrophenol		U	
132-64-9	100-02-7	4-Nitrophenol	50.	U	
121-14-22,4-Dinitrotoluene 84-66-2Diethylphthalate 7005-72-34-Chlorophenyl-phenylether 86-73-7Fluorene 100-01-64-Nitroaniline 534-52-14,6-Dinitro-2-methylphenol 86-30-6N-Nitrosodiphenylamine 101-55-34-Bromophenyl-phenylether 118-74-1Hexachlorobenzene 87-86-5Pentachlorophenol 85-01-8Phenanthrene 100	132-64-9	Dibenzofuran	10.	ט	
84-66-2	121-14-2	2,4-Dinitrotoluene	- I		
10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.	84-66-2	Diethylphthalate	10.	ט	1
10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.	7005-72-3	4-Chlorophenyl-phenylether	10.	U	1
S34-52-14,6-Dinitro-2-methylphenol   86-30-6N-Nitrosodiphenylamine   10.	86-73-7	Fluorene	10.	ע 🦳	J
86-30-6N-Nitrosodiphenylamine       10.       U         101-55-34-Bromophenyl-phenylether       10.       U         118-74-1Hexachlorobenzene       10.       U         87-86-5Pentachlorophenol       50.       U         85-01-8Phenanthrene       10.       U         120-12-7Anthracene       10.       U         84-74-2Di-n-butylphthalate       10.       U         206-44-0	100-01-6	4-Nitroaniline	- <del>50.</del>		]
86-30-6N-Nitrosodiphenylamine       10.       U         101-55-34-Bromophenyl-phenylether       10.       U         118-74-1Hexachlorobenzene       10.       U         87-86-5Pentachlorophenol       50.       U         85-01-8Phenanthrene       10.       U         120-12-7Anthracene       10.       U         84-74-2Di-n-butylphthalate       10.       U         206-44-0	534-52-1	4,6-Dinitro-2-methylphenol	50.	∫ ט `	<u></u>
101-55-34-Bromophenyl-phenylether 118-74-1Hexachlorobenzene 87-86-5Pentachlorophenol 85-01-8Phenanthrene 120-12-7Anthracene 84-74-2Di-n-butylphthalate 10. U 129-00-0Pyrene 85-68-7Butylbenzylphthalate 10. U 10. U 117-94-13,3'-Dichlorobenzidine 10. U 117-81-7bis(2-Ethylhexyl)phthalate 10. U 117-84-0	86-30-6	N-Nitrosodiphenylamine	10.		
118-74-1	101-55-3	4-Bromophenyl-phenylether	10.	U	car
87-86-5Pentachlorophenol       50.       U         85-01-8Phenanthrene       10.       U         120-12-7Anthracene       10.       U         84-74-2Di-n-butylphthalate       10.       U         206-44-0Pluoranthene       10.       U         129-00-0Pyrene       10.       U         85-68-7Butylbenzylphthalate       10.       U         91-94-13,3'-Dichlorobenzidine       20.       U         56-55-3Benzo(a) anthracene       10.       U         218-01-9bis(2-Ethylhexyl)phthalate       10.       U         117-81-7bis(2-Ethylhexyl)phthalate       10.       U         205-99-2	118-74-1	Hexachlorobenzene	10.	U	1151
10.   U   120-12-7Anthracene	87-86-5	Pentachlorophenol	50.	ן ט	
10. U 84-74-2Di-n-butylphthalate 206-44-0Fluoranthene 129-00-0Pyrene 85-68-7Butylbenzylphthalate 91-94-13,3'-Dichlorobenzidine 56-55-3Benzo(a) anthracene 117-81-7bis(2-Ethylhexyl) phthalate 117-94-0Di-n-octylphthalate 205-99-2Benzo(b) fluoranthene 207-08-9Benzo(k) fluoranthene 10. U 207-08-9Benzo(k) fluoranthene 10. U 208-09-10	85-01-8	Phenanthrene	10.	ן ט	
84-74-2Di-n-butylphthalate 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10. U 10.	120-12-7	Anthracene	10.	ן ט	
206-44-0Fluoranthene 129-00-0Pyrene 85-68-7Butylbenzylphthalate 91-94-13,3'-Dichlorobenzidine 56-55-3Benzo(a) anthracene 218-01-9Chrysene 117-81-7bis(2-Ethylhexyl) phthalate 10. U 117-94-0Di-n-octylphthalate 205-99-2Benzo(b) fluoranthene 207-08-9Benzo(k) fluoranthene 10. U 10. U 11. U 11. U 10. U 11. U 10. U 11. U 10. U 10. U 10. U 10. U 10. U 10. U	84-74-2	Di-n-butylphthalate	10.	U	
129-00-0	206-44-0	Fluoranthene	10.	ן ט	L
85-68-7Butylbenzylphthalate	129-00-0	Pvrene		10- NJ	Γ
91-94-13,3'-Dichlorobenzidine	85-68-7	Butylbenzylphthalate	10.	ט _	ĺ
56-55-3Benzo(a) anthracene	91-94-1	3.3'-Dichlorobenzidine	-20.	<del> v  </del>	İ
218-01-9Chrysene 10. U 117-81-7bis(2-Ethylhexyl)phthalate 10. U 117-84-0Di-n-octylphthalate 10. U 205-99-2Benzo(b)fluoranthene 10. U 207-08-9Benzo(k)fluoranthene 10. U	56-55-3	Benzo(a) anthracene	10.	ט `	
117-81-7bis(2-Ethylhexyl)phthalate 10. U 117-84-0Di-n-octylphthalate 10. U 205-99-2Benzo(b)fluoranthene 10. U 207-08-9Benzo(k)fluoranthene 10. U	218-01-9	Chrysene		ן ט	
117-84-0Di-n-octylphthalate 10. U 205-99-2Benzo(b) fluoranthene 10. U 207-08-9Benzo(k) fluoranthene 10. U	117-81-7	bis(2-Ethylhexyl)phthalate		ן טן	Į
205-99-2Benzo(b) fluoranthene 10. U 207-08-9Benzo(k) fluoranthene 10. U	117-84-0	Di-n-octvlphthalate		i i	
207-08-9Benzo(k) fluoranthene 10. U	205-99-2	Benzo(b) fluoranthene	10.	ן ט	
	207-08-9	Benzo(k) fluoranthene			
50-32-8Benzo(a) pyrene 10.   U	50-32-8	Benzo(a)pyrene	10.	ן ט	
193-39-5Indeno(1,2,3-cd)pyrene10. U	193-39-5	Indeno(1,2,3-cd)pyrene		i i	
53-70-3Dibenzo(a,h)anthracene 10. U	53-70-3	Dibenzo(a,h)anthracene		J - I	
191-24-2Benzo(g,h,i)perylene10. U	191-24-2	Benzo(g,h,i)perylene	1	1 - 1	
				1	
- Cannot be separated from diphenylamine	- Cannot be	separated from diphenylamine			

FORM I SV-2

(g/mL) ML

### SEMIVOLAT E ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

V131S10FS

ab Name: PACE

Contract:

00037

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3694.7

Sample wt/vol:

1000.

Lab File ID: D2760

evel: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100.

Date Extracted: 5/24/91

\_xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

TPC Cleanup:

(Y/N) N

dec. 0.

Dilution Factor:

1.00

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1				
3				
5.				
7.				
9.				
12:				
13.				
15. 16. 17.				
18.				
19. 20. 21.				
22				
25.	-			
27.				
28.				
30				

FORM I SV-TIC

### SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

V140S10F3

ab Name: PACE

Contract:

00041

ab Code: PACE Case No.: EPC

SAS No.:

SDG No.:

..atrix: (soil/water) WATER

Lab Sample ID: 3693.9

-ample wt/vol: 1000. (g/mL) ML

Lab File ID: D2766

Level: (low/med) LOW

Date Received: 5/19/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

CC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND

(ug/L or ug/Kg) UG/L

0

	COMPOUND	(ug/ii oi			*
108-95-2	Phenol			10.	U
	bis(2-Chloroethyl)	ether		10.	Ū
95-57-8	2-Chlorophenol		<del></del> 1	10.	Ū
541-73-1	1.3-Dichlorobenzer	ne		10.	Ū
106-46-7	1,4-Dichlorobenzer	ne		10.	Ū
100-51-6	Benzyl alcohol		—(	10.	Ū
95-50-1	1,2-Dichlorobenzer	ne .		10.	Ū
95-48-7	2-Methylphenol		<del></del>	10.	U
108-60-1	bis(2-Chloroisopro	pyl)ethe	r	10.	Ū
106-44-5	4-Methylphenol		_	10.	Ū
621-64-7	N-Nitroso-di-n-pro	pylamine		10.	Ū
67-72-1	Hexachloroethane_	. F. J. Z. Z. Z. Z. Z. Z. Z. Z. Z. Z. Z. Z. Z.	—	10.	Ŭ
98-95-3	Nitrobenzene			10.	Ŭ
78-59-1	Isophorone		—I	10.	Ŭ
88-75-5	2-Nitrophenol	<del></del>		10.	ΙŬ
105-67-9	2,4-Dimethylphenol	<del></del>	1	10.	Ü
65-85-0	Benzoic acid	· <del></del>	— <u> </u>	50.	Ü
111-91-1	bis(2-Chloroethoxy	Imathana	<del></del>	10.	Ü
120-83-2	2,4-Dichlorophenol	) me chane	<del></del>	10.	ŭ
120-82-1	1,2,4-Trichloroben	7000	<del></del>	10.	ϋ
91-20-3	Naphthalene		<del></del>	10.	Ü
106-47-8	4-Chloroaniline		<del></del>	10.	Ü
87-68-3	Hexachlorobutadien		<del>-</del> 1	10.	Ü
59-50-7	4-Chloro-3-methylp	bono!		10.	Ü
91-57-6	2-Methylnaphthalen	menor —		10.	ប
77-47-4	Aona pjesa arajesa	± 23.000			บ
99-06-2	Hexachlorocyclopen	rautene .	<del></del>	10.	1
05-05-4	2,4,6-Trichlorophe	no1	—I	10.	U
99-99-4	2,4,5-Trichlorophe	no1		50.	U
91-58-/	2-Chloronaphthalen	e		10.	U
121 11 2	2-Nitroaniline	<del></del> -		50.	U
131-11-3	Dimethylphthalate		∤	10.	U
208-96-8	Acenaphthylene		<u>_</u>	10.	U
606-20-2	2,6-Dinitrotoluene			10.	U

V140S10F5

ao Name: PACE

Contract:

Lab Code: PACE

Case No.: EPC SAS No.:

SDG No.:

atrix: (soil/water) WATER

Lab Sample ID: 3693.9

Sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2766

evel:

(low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100. dec.

0004

Date Extracted: 5/24/91

(traction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

CPC Cleanup: (Y/N) N

pH: 7.0

0.

Dilution Factor:

1.00

CAS NO.

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

COMPOUND 99-09-2----3-Nitroaniline\_ 50. U 83-32-9----Acenaphthene 10. U 51-28-5----2,4-Dinitrophenol \_ 50. U 100-02-7----4-Nitrophenol 50. U 132-64-9-----Dibenzofuran 10. U 121-14-2----2,4-Dinitrotoluene\_ U 10. 84-66-2----Diethylphthalate U 10. 7005-72-3----4-Chlorophenyl-phenylether 10. U 86-73-7----Fluorene U 10. U 100-01-6----4-Nitroaniline <del>50.</del> U 534-52-1----4,6-Dinitro-2-methylphenol\_ 50. 10. 86-30-6----N-Nitrosodiphenylamine U 101-55-3----4-Bromophenyl-phenylether U 118-74-1----Hexachlorobenzene 10. U 202 87-86-5----Pentachlorophenol U 50. 45191 U 85-01-8----Phenanthrene 10. 120-12-7----Anthracene U 10. 84-74-2----Di-n-butylphthalate 10. U 206-44-0----Fluoranthene\_ U 10. 129-00-0----Pyrene\_ U 10. 85-68-7----Butylbenzylphthalate U 10. R 91-94-1----3,3'-Dichlorobenzidine 20. U 56-55-3----Benzo(a)anthracene\_ U 10. 218-01-9-----Chrysene U 10. 117-81-7----bis(2-Ethylhexyl)phthalate\_\_ U 10. 117-84-0----Di-n-octylphthalate ΙIJ 10. 205-99-2----Benzo(b) fluoranthene\_ 10. U 207-08-9----Benzo(k) fluoranthene U 10. 50-32-8----Benzo(a)pyrene U 10. 193-39-5----Indeno(1,2,3-cd)pyrene\_ 10. U

FORM I SV-2

53-70-3----Dibenzo(a,h)anthracene

(1) - Cannot be separated from diphenylamine

191-24-2----Benzo(g,h,i)perylene\_

1/87 Rev.

10.

10.

U

U

1F

EPA SAMPLE NO.

SEMIVOLA? E ORGANICS ANALYSIS DATA SHEET TEN.ATIVELY IDENTIFIED COMPOUNDS

۷140S10F5

ab Name: PACE

contract:

ab Code: PACE Case No.: EPC SAS No.:

00043<sub>DG No.:</sub>

atrix: (soil/water) WATER

Lab Sample ID: 3693.9

Sample wt/vol: 1000. (g/mL) ML

Lab File ID: D2766

evel: (low/med) LOW

Date Received: 5/19/91

% Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

ctraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

GPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

CONCE	TR	MOITA	U	ITS:
(ug/L	or	ug/Kg	I)	UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1				
2				
3				
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9				
10.				
14.				
14.				
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23				
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### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/20/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Data quality for this sample delivery group was good. Detection limits for aromatic compounds were qualified as estimated in all samples. Detection limits for 2-butanone were rejected in all samples.

Upon receipt of samples by the laboratory, cooler temperatures ranged from  $10^{\circ}\text{C}$  to  $14^{\circ}\text{C}$ . Cooler temperatures outside the  $4^{\circ}\text{C}$   $\pm 2^{\circ}\text{C}$  range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Eight samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 20, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-23	3737	05/20/91
S1-23DUP	3738	05/20/91
S1-23TB	3739	05/20/91
S2-21	3769	05/20/91
S3-21	3743	05/20/91
S4-21	3744	05/20/91



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

All samples were analyzed outside the 7-day holding time for nonpreserved samples but within the 14-day holding time. Detection limits for aromatic compounds were qualified as estimated in all samples.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data appear to be affected.

#### A. Initial

Initial calibration criteria were met on 5/28/91 with the exception of the RRF for 2-butanone (actual 0.077; criteria 0.1). Detection limits for 2-butanone were rejected in all samples.

#### B. Continuing

Continuing calibration criteria were met on 5/29/91 (11:36) with the exception of the RF for 2-butanone (actual 0.047; criteria 0.1) and the % difference for bromomethane (actual 49.2; criteria 25), 2-butanone (actual 38.7; criteria 25), 4-methyl-2-pentanone (actual 28.7; criteria 25), and 2-hexanone (actual 27.7; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/29/91 (23:56) with the exception of the RF for 2-butanone (actual 0.041; criteria 0.1) and the % difference for bromomethane (actual 34.2; criteria 25), 2-butanone (actual 46.3; criteria 25), 4-methyl-2-pentanone (actual 25.5; criteria 25), and 2-hexanone (actual 27.5; criteria 25). Data were not affected.

### IV. Blanks

Method blanks and the trip blank were clean.



### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

### VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-23. The percent recoveries for 1,1-dichloroethene in the MS and the MSD were below QC criteria. No positive results for 1,1-dichloroethene were reported in field samples; data were not affected.

### VII. Field Duplicates

Compounds and concentrations (in ug/L) reported in Samples S1-23 and S1-23DUP were as follows:

Compound	<u> 51-21</u>	<u>S1-21DUP</u>
1,1-Dichloroethane Trichloroethene	78	·34 75
Tetrachloroethene	3200	3300

The compound 1,1-dichloroethane was crossed out on the quant report for S1-23DUP but apparently inadvertently reported on the Form I. This compound is rejected for Sample S1-23DUP. Other results were within QC criteria.

### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

### IX. TCL Compound Identification

TCL compound identifications were acceptable.

### X. Compound Quantitation and Reported Detection Limits

Results and detection limits were acceptable with regard to the supporting data.

### XI. Tentatively Identified Compounds

No TICs were reported for this SDG.



### XII. System Performance

System performance requires attention. Manual integrations should be addressed. Holding time for non preserved samples was exceeded on all samples.

### XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was good. Detection limits for aromatic compounds were estimated in all samples. Detection limits for 2-butanone were rejected in all samples.

### VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3737.4

Sample wt/vol: 5. (g/mL) ML Lab File ID:  $63203 \quad 0000022$ 

Level: (low/med) LOW Date Received: 5/21/91

% Moisture: not dec.100. Date Analyzed: 5/29/91

Column: (pack/cap) PACK Dilution Factor: 20.00

CONCEN	ITR/	NOITA	U١	:2TIV
(110/1				LIC /I

CAS NO.	COMPOUND (ug/L or	ug/Kg) UG/L	Q ´
;			
1 74-87-3	Chloromethane	; 200.	; U ;
1 74-83-9	Bromomethane	1 200.	:U :
1 75-01-4	Vinyl Chloride	200.	: U :
1 75-00-3	Chloroethane	: 200.	!U !
1 75-09-2	Methylene Chloride	; 100.	:U :
1 67-64-1	Acetone	; 200.	ו ט ו
1 75-15-0	Carbon Disulfide	; 100.	: U :
1 75-35-4	1,1-Dichloroethene	100.	: U :
1 75-34-3	1,1-Dichloroethane	100.	1U 1
1 540-59-0	1,2-Dichloroethene (total)	; 100.	: U :
1 67-66-3	Chloroform	: 100.	: U :
1 107-06-2	1,2-Dichloroethane	: 100.	וט :
1 78-93-3	2-Butanone	1 2007	HR:
; 71-55-6	1,1,1-Trichloroethane	; 100.	:U :
1 56-23-5	Carbon Tetrachloride	100.	:0 :
108-05-4	Vinyl Acetate	: 200.	:U :
1 75-27-4	Bromodichloromethane	; 100.	:U :
1 78-87-5	1,2-Dichloropropane	: 100.	:U :
110061-01-5	cis-1.3-Dichloropropene	100.	:U :
: 79-01-6	Trichloroethene	! 81.	J
1 124-48-1	Dibromochloromethane	100.	¦υ ;
: 79-00-5	1,1,2-Trichloroethane	100.	:U :
1 71-43-2	Benzene	100.	: Lu:
10061-02-6	Trans-1,3-Dichloropropene	; 100.	: U :
1 75-25-2	Bromoform	100.	:U :
108-10-1	4-Methyl-2-Pentanone	200.	: U :
591-78-6	2-Hexanone	200.	:U :
127-18-4	Tetrachloroethene	3500.	1
79-34-5	1,1,2,2-Tetrachloroethane	100.	ן טן:
108-88-3	Toluene	100.	: Lu :
108-90-7	Chlorobenzene	100.	: 101
100-41-4	Ethylbenzene	100.	in 1
100-42-5	Styrene	100.	(U)
1330-20-7	Xylene(total)	100.	່ານວ່າ
1000 20 .	7 2 6 116 4 9 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		
			- ' '

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

Number TICs found: 0

(atrix: (soil/water) WATER Lab Sample ID: 3737.4

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3203

evel: (low/med) LOW Date Received: 5/21/0900023

% Moisture: not dec.100. Date Analyzed: 5/29/91

Lolumn: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=======================================	=======================================	=	=======================================	====
1,	· · ·	_ '	<sup>!</sup>	
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3		_		
4		. !	!	
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		<b>-</b> , <b>-</b> ,		
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FORM I VOA-TIC

# VOLA1\_LE JRGANICS ANALYSIS DATA SHEET

ab Name: PACE Contract:

1atrix: (soil/water) WATER Lab Sample ID: 3738.2

ample wt/vol: 5. (g/mL) ML Lab File ID: G3220 000029

\_evel: (low/med) LOW Date Received: 5/21/91

Moisture: not dec.100. Date Analyzed: 5/30/91

Column: (pack/cap) PACK Dilution Factor: 30.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

74-87-3	Chloromethane	300.	U
74-83-9	Bromomethane	300.	Ū
75-01-4	Vinvl Chloride	300.	ט
75-00-3	Chloroethane	300.	ש
75-09-2	Methylene Chloride	150.	U
67-64-1	Acetone	300.	U
75-15-0	Carbon Disulfide	150.	U
75-35-4	1.1-Dichloroethene	150.	U
75-34-3	1,1-Dichloroethane	34.	12R
540-59-0	1,2-Dichloroethene (total)	150.	ט '
67-66-3	Chloroform	150.	ט
107-06-2	1,2-Dichloroethane	150.	U
78-93-3	2-Butanone	300.	U
71-55-6	1,1,1-Trichloroethane	150.	U
56-23-5	Carbon Tetrachloride	150.	U
108-05-4	Vinyl Acetate	300.	ן ט
75-27-4	Bromodichloromethane	150.	ט
78-87-5	1,2-Dichloropropane	150.	U
10061-01-5	cis-1,3-Dichloropropene	150.	U
79-01-6	Trichloroethene	85.	J
124-48-1	Dibromochloromethane	150.	U
79-00-5	1,1,2-Trichloroethane	150.	U,
71-43-2	Benzene	150.	רט
.0061-02-6	Trans-1,3-Dichloropropene	150.	U
	Bromoform	150.	U
108-10-1	4-Methyl-2-Pentanone	300.	U
591-78-6	2-Hexanone	300.	ַט
127-18-4	Tetrachloroethene	2100.	
79-34-5	1,1,2,2-Tetrachloroethane	150.	<b>ע</b>
108-88-3	Toluene	150.	עט
108-90-7	Chlorobenzene	150.	ΩJ
100-41-4	Ethylbenzene	150.	ΩŢ
100-42-5	Styrene	150.	בט
1330-20-7	Xylene(total)	150.	נט

### VOLAT 'J' ORGANICS ANALYSIS DATA SHEET TELLA'L JELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S1-23DUP

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

atrix: (soil/water) WATER

Lab File ID: G3220 0000000

Lab Sample ID: 3738.2

cample wt/vol:

5. (g/mL) ML

\_evel: (low/med) LOW

Date Received: 5/21/91

^ Moisture: not dec.100.

Date Analyzed: 5/30/91

Dilution Factor: 30.00

column: (pack/cap) FACK

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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### VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. : S1-23 TB

Lab Name: PACE

Contract:

SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3739.0

Lab File ID: 63222 0000036 Sample wt/vol: 5. (g/mL) ML

Level: (low/med) LOW Date Received: 5/21/91

% Moisture: not dec.100. Date Analyzed: 5/30/91

|Column: (pach/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND		TRATION or ug/k		٥
74-87-3 74-83-9 75-01-4 75-09-2 67-64-1 75-35-4 75-34-3 107-06-2 108-05-4 75-27-4 78-87-5 1061-01-5 79-00-5 71-43-2	ChloromethaneBromomethaneBromomethaneVinyl ChlorideChloroethaneMethylene ChlorCarbon Disulfid1,1-Dichloroeth1,2-Dichloroeth1,2-DichloroethCarbon TetrachloroethCarbon TetrachloroethCarbon TetrachloroethCarbon TetrachloroethCarbon TetrachloroethCarbon TetrachloroethCarbon TetrachloroethTrichloroethene	eneene (totalene corideethaneethaneethaneethaneethaneethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane_ethane	or ug/k	10. 10. 10. 10. 10. 5. 5. 5. 5. 5. 5. 5. 5. 5.	
75-25-2 108-10-1 591-78-6 127-18-4 79-34-5 108-88-3 108-90-7 100-41-4 100-42-5	Trans-1,3-DichloBromoform4-Methyl-2-Penta2-HexanoneTetrachloroether1,1,2,2-TetrachlTolueneChlorobenzeneEthylbenzeneStyreneXylene(total)	anone ne loroethan	e	5. 5. 10. 10. 5. 5. 5. 5.	: D : D : D : D : D : D : D : D : D : D

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S1-23 TB
Contract:

Lab Name: PACE Contract

Number TICs found:

Matrix: (soil/water) WATER Lab Sample ID: 3739.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63222 000037

Level: (low/med) LOW Date Received: 5/21/91

% Moisture: not dec.100. Date Analyzed: 5/30/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/kg) UG/L

COMPOUND NAME RT CAS NUMBER : EST. CONC. : Q 2·\_\_\_\_; 3.\_\_\_\_\_| 4.\_\_\_\_| 5.\_\_\_\_\_|\_\_\_| 10.\_\_\_\_ 11.\_\_\_\_\_ 12.\_\_\_\_; 16.\_\_\_\_ 17. \_\_\_\_\_|\_\_\_| 18.\_\_\_\_\_ \_\_\_\_ ------30.\_\_\_\_\_

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### VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

S2-21

Matrix: (soil/water) WATER Lab Sample ID: 3742.0

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3221 0000041

Level: (low/med) LOW Date Received: 5/21/91

% Moisture: not dec.100. Date Analyzed: 5/30/91

Column: (pack/cap) PACk Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTA (ug/L or	RATION UN		Q	_
74-87-3 74-83-9 75-01-4 75-09-2 75-09-2 75-15-0 75-35-4 75-34-3 75-34-3 107-06-2 78-93-3 71-55-6 108-05-4 75-27-4 78-87-5 124-48-1 79-01-6 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1 124-48-1	ChloromethaneBromomethaneVinyl ChlorideChloroethaneMethylene ChlorideCarbon Disulfide1,1-Dichloroethane1,2-DichloroethaneChloroform1,2-Dichloroethane1,1,1-Trichloroethane2-Butanone1,1,1-Trichloroethane1,1,1-Trichloroethane1,1,1-TrichloroethaneCarbon TetrachlorVinyl AcetateBromodichlorometh1,2-Dichloropropacis-1,3-Dichloropropacis-1,3-DichloroethaneDibromochlorometh1,1,2-Trichloroethane	de de ne ne (total ne thane ane oropene chane	ug/kg)			
108-90-7 100-41-4 100-42-5	Chlorobenzene Ethylbenzene Styrene Xylene(total)			25. 25. 25. 25.	: : n 7 : n 7 : n 7	; ; ;

### VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

lab Name: PACE Contract:

SDG No.:

Lab Sample ID: 3742.0 atrix: (soil/water) WATER

Lab File ID: 63221 0000042 Sample wt/vol: 5. (g/mL) ML

evel: (low/med) LOW Date Received: 5/21/91

" Moisture: not dec.100. Date Analyzed: 5/30/91

column: (pack/cap) PACK Dilution Factor: 5.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

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CAS NUMBER	COMPOUND NAME	, ; RT	EST. CONC.	; Q ;
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'A SAMPLE NO.

S3-21

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3743.9 000040

ample wt/vol: 5. (g/mL) ML Lab File ID: G3223

Level: (low/med) LOW Date Received: 5/21/91

Moisture: not dec.100. Date Analyzed: 5/30/91

Column: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS:
CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

CAD NO.	(49/2 01	dg/Ng/ OG/L	*
74-87-3	Chloromethane	100.	U
	Bromomethane	100.	ט
	Vinyl Chloride		U
75-00-3	Chloroethane	100.	Ū
75-09-2	Methylene Chloride	50.	Ū
67-64-1	Acetone	100.	Ū
	Carbon Disulfide	50.	Ū
	1,1-Dichloroethene		Ū
75-34-3	1,1-Dichloroethane	50.	Ū
540-59-0	1,2-Dichloroethene (total)		Ū
67-66-3	Chloroform	50.	Ū
	1,2-Dichloroethane		Ŭ ,
78-93-3	2-Butanone	100.	UR
71-55-6	1,1,1-Trichloroethane		ับ ,
56-23-5	Carbon Tetrachloride	50.	บ
108-05-4	Vinyl Acetate	100.	Ū
75-27-4	Bromodichloromethane	50.	Ŭ
	1,2-Dichloropropane	50.	Ŭ
0061-01-5	cis-1,3-Dichloropropene		Ŭ
79-01-6	Trichloroethene	35.	J
124-48-1	Dibromochloromethane	50.	บั
79-00-5	1,1,2-Trichloroethane	50.	Ŭ
71-43-2	Benzene	50.	Lΰ
	Trans-1, 3-Dichloropropene		Ü
75-25-2	Bromoform	50.	Ü
108-10-1	4-Methyl-2-Pentanone	100.	บั
501-70-6	2-Hexanone	100.	Ü
	Tetrachloroethene		₽ .
	1,1,2,2-Tetrachloroethane	920.	U
108-88-3			_
100-00-3	Chlorene	50.	ūΊ
100-90-/	Chlorobenzene		n 🤈
100-41~4	Ethylbenzene		Uj
100-42-5	Styrene		Ωĺ
1330-20-7	Xylene(total)	50.	υJ

# VOLAT E RGANICS ANALYSIS DATA SHEET TENTATILELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S3-21	
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Name: PACE

Contract:

ab Code: PACE Case No.: EPC

SAS No.:

SDG No.: 0000050

: rix: (soil/water) WATER

Lab Sample ID: 3743.9

?-ple wt/vol: 5. (g/mL) ML

Lab File ID: G3223

evel: (low/med) LOW

Date Received: 5/21/91

oisture: not dec.100.

Date Analyzed: 5/30/91

olumn: (pack/cap) PACK

\\_mber TICs found: 0

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC

### VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3744.7

Sample wt/vol: 5. (g/mL) ML Lab File ID: 63224000055

Level: (low/med) LOW Date Received: 5/21/91

% Moisture: not dec.100. Date Analyzed: 5/30/91

Column: (pack/cap) PACK Dilution Factor: 10.00

### CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L)	or u	g/Kg)	UG/L	Q	
1			<del></del>			!
1 74-87-3	Chloromethane		_;	100.	١U	ł
1 74-83-9	Bromomethane		_	100.	١U	;
1 75-01-4	Vinyl Chloride		_ ;	100.	:U	:
1 75-00-3	Chloroethane		_	100.	; U	1
1 75-09-2	Methylene Chloride		_ ;	50.	:U	:
67-64-1	Acetone Carbon Disulfide		_	100.	:U	;
75-15-0	Carbon Disulfide		_	50.	١U	;
75-35-4 <i></i>	1,1-Dichloroethene		_	50.	١U	;
1 75-34-3	1,1-Dichloroethane		_	50.	: U	:
540-59-0	1,2-Dichloroethene (tota	al)	_ ;	50.	١U	:
1 67-66-3	Chloroform		_ :	50.	١U	:
107-06-2	1.2-Dichloroethane		- 1	50.	:U	;
1 78-93-3	2-Butanone		_	100.	:UR_	;
71-55-6	1,1,1-Trichloroethane		_ i	44.	J	;
1 56-23-5	Carbon Tetrachloride		_	50.	: U	1
108-05-4	Vinyl Acetate		_	100.	١U	:
1 75-27-4	Bromodichloromethane		_	50.	١U	;
1 78-87-5	1,2-Dichloropropane		<u> </u>	50.	١U	;
110061-01-5	cis-1,3-Dichloropropene		_	50.	١U	:
1 79-01-6	Trichloroethene		:	73.	;	:
124-48-1	Dibromochloromethane		[	50.	: U	1
	1,1,2-Trichloroethane			50.	١U	:
1 71-43-2	Benzene		- 	50.	:ប ្ប	1
110061-02-6	Trans-1,3-Dichloropropen	e	-	50.	: U	<b>;</b>
1 75-25-2	Bromoform		- 	50.	: U	:
108-10-1	4-Methy1-2-Pentanone		-	100.	!U	1
: 591-78-6	2-Hexanone		-;	100.	ŧU	1
127-18-4	Tetrachloroethene		- ;	1900.	18	;
	1,1,2,2-Tetrachloroethan			50.	١U	;
108-88-3	Toluene		· .	50.	:u )	1
108-90-7	Chlorobenzene			50.	iu J	
100-41-4	Ethylbenzene			50.	,u.,	ì
100-42-5	Styrene			50.	: n7	
1330-20-7	Xylene(total)			50.	:UU	i
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# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S4-21 ;

Lab Name: PACE Contract:

Number TICs found: 0

Sample wt/vol: 5. (g/mL) ML Lab File ID: G3224 000056

evel: (low/med) LOW Date Received: 5/21/91

" Moisture: not dec.100. Date Analyzed: 5/30/91

Lolumn: (pack/cap) PACK Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

; CAS NUMBER ; ;===================================	COMPOUND NAME	: RT	: EST. CONC.	: : Q !====	
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FORM I VOA-TIC



### DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

VOLATILES ANALYSES DATA

METHOD 524.2 ANALYSES

Samples Collected 5/20/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Data quality for this sample delivery group was good. Methylene chloride results in three samples were corrected to "ND" because the results reported were below the MDL determined by the PQL study for this project.

The samples in this sample delivery group were to have been preserved with catalase and HCl. Although it is believed that the samples were preserved, no notation was made on chain of custody forms or any other documentation presented in this data package. The data validator was, therefore, required to treat these samples as nonpreserved samples.

Cooler temperatures upon receipt of samples by the laboratory were  $10^{\circ}\text{C}$  to  $14^{\circ}\text{C}$ . Temperatures outside the range of  $4^{\circ}\text{C}$   $\pm 2^{\circ}\text{C}$  may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



### Case Narrative

Five treatment system samples were collected and submitted to PACE, Inc. on May 20, 1991. The laboratory was requested to perform volatile organics analyses (VOA) using Method 524.2. The analyte list for this method was amended pursuant to the QA/QC Plan for this project.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-23FB	3740	05/20/91
S5-18	3745	05/20/91
S6-23	3746	05/20/91
S6-23DUP	3747	05/20/91
S6-23TB	3748	05/20/91



### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

These samples were to have been preserved with catalase and HCL, but no notation was made regarding either preservative on the chain of custody forms or other documentation in this data package. The data validator was, therefore, required to treat these samples as unpreserved samples.

All samples were analyzed outside the 7-day holding time but within the 14-day holding time for nonpreserved samples. Detection limits for aromatic compounds were qualified as estimated for all samples.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation was provided. Such documentation has been requested from the laboratory. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No sample data appear to be affected.

### A. Initial

Initial calibration criteria were met on 5/23/91.

### B. Continuing

Continuing calibration criteria were met on 5/30/91.

### IV. Blanks

The trip blank, field blank, and method blanks were clean.

### V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.



### VI. Matrix Spike/Matrix Spike Duplicate

A matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S6-23. Data were within acceptance criteria.

### VII. Field Duplicates

Samples S6-23 and S6-23DUP were submitted as duplicate samples. No compounds were detected in either sample.

### VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

### IX. TCL Compound Identification

TCL compound identifications were acceptable.

### X. Compound Quantitation and Reported Detection Limits

The laboratory performed a practical quantitation limit (PQL) study for the Method 524.2 analyses for this project on October 15, 1990. Method detection limits (MDLs) determined through that PQL study should have been used for reporting purposes for these treatment system samples. MDLs determined through the PQL study were as follows:

Compound	MDL (ug/L)
Vinyl Chloride	0.48
Chloroethane	0.49
Methylene Chloride	4.41
1,1-Dichloroethene	0.67
1,1-Dichloroethane	0.54
trans-1,2-Dichloroethene	0.50
Chloroform	0.53
1,2-Dichloroethane	0.52
1,1,1-Trichloroethane	0.44
Carbon Tetrachloride	0.43
Bromodichloromethane	0.38
1,2-Dichloropropane	0.45
cis-1,3-Dichloropropene	0.33
Trichloroethene	0.42



Compound	MDL (ug/L)
Dibromochloromethane	0.33
1,1,2-Trichloroethane	0.43
Benzene	0.58
trans-1,3-Dichloropropene	0.07
Bromoform	0.49
Tetrachloroethene	0.51
1,1,2,2-Tetrachloroethane	0.44
Toluene	0.45
Chlorobenzene	0.44
Ethylbenzene	0.51
m-Xylene	0.48
o-, p-Xylene	0.93
1,2-Dichloroethane-d4	0.50
Toluene-d8	0.45
Bromofluorobenzene	0.36

Methylene chloride was reported in Samples S5-18, S6-23, and S6-23DUP at concentrations below the MDL determined by the PQL study for this project. Methylene chloride concentrations in these three samples were corrected to be "ND."

The result reported for 1,1,1-trichloroethane in Sample S5-18 (32 ug/L) was beyond the calibration range of the instrument (25 ug/L). This result was qualified as estimated.

All other results and detection limits were acceptable with regard to the supporting data.

### XI. Tentatively Identified Compounds

No TICs were reported for this sample delivery group.

### XII. System Performance

System performance was acceptable.

### XIII. Overall Assessment of Data for a Case

Detection limits for aromatic compounds were qualified as estimated in all samples. It is believed that samples in this sample delivery group were preserved; however, no documentation was provided.

Methylene chloride was corrected to be "ND" in Samples S5- 18, S6-23, and S6-23DUP.

UNIFIRST/ENSR	PACE Project Number: 810521500
PACE Sample Number:	95 0037404 0 0 0 2 5 05/20/91 05/21/91 Units MDL S1-23 FB
ORGANIC ANALYSIS  VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L 0.5 ND ug/L 0.5 ND ug/L 0.5 ND ug/L 0.5 ND ug/L 0.5 ND ug/L 0.5 ND ug/L 0.5 ND ug/L 0.5 ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L _0.5 ND _ ug/L _0.5 ND _ ug/L _0.5 ND _ ug/L _0.5 ND _ ug/L _0.5 ND _ ug/L _0.5 ND _ ug/L _0.5 ND _
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L 0.5 ND (F) 1/1/41  ug/L 0.5 ND  ug/L 0.5 ND  ug/L 0.5 ND  ug/L 0.5 ND  ug/L 0.5 ND U
Ethyl benzene Xylene, total  MDL Method Detection Limit ND Not detected at or above the ME	ug/L - 0.5 - ND

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UNIFIRST/ENSR	PACE Proj	ect Numl	per: 81052	
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 003745 05/20/91 05/21/91 <u>S5-18</u>	⊕0029 -
ORGANIC ANALYSIS				
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND 1.2 ND 1.4 3.8 ND	243
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND 32J ND ND	
<pre>1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene</pre>	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	וס ויין מט מט מט מט מט מט מט מט מט מט מט מט מט	
trans-1,3-Dichloropropene Bromoform Tetrachloroethene	ug/L ug/L ug/L	0.5 0.5 0.5	ND ND 2.5	

0.5

0.5

0.5

0.5 0.5 ND

ND

ND

ND \_

ND ILJ

ug/L

uğ/L

ug/L ug/L

MDL

Chlorobenzene

Ethyl benzene Xylene, total

Toluene

1,1,2,2-Tetrachloroethane

Method Detection Limit Not detected at or above the MDL. ND

UNIFIRST/ENSR	PACE Proje	ect Numl	ber: 810521500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0037463 () () () () () () () () () () () () ()
ORGANIC ANALYSIS		1	
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethane 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND 14/1/21
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	DN DN DN DN DN DN DN
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND W) ND W)
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

MDL Method Detection Limit
ND Not detected at or above the MDL.

UNIFIRST/ENSR	PACE Project Number:	810521500

PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0037471 0 0 0 4 3 05/20/91 05/21/91 S6-23 Dup
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethane 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND MD ND ND ND ND ND ND ND ND ND ND ND ND ND
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND LOND LOND LOND LOND LOND LOND LOND LO
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND ND

MDL

Method Detection Limit Not detected at or above the MDL. ND

UNIFIRST/ENSR	PACE Proje	ect Numb	per: 810521500
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	95 0037480 05/20/91 05/21/91 S6-23 TB
ORGANIC ANALYSIS			
VOLATILE ORGANICS BY 524.2 MODIFIED Vinyl chloride Chloroethane Methylene chloride 1,1-Dichloroethene 1,1-Dichloroethane trans-1,2-Dichloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 1,1,1-Trichloroethane Carbon tetrachloride Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane Benzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND WS &x \ \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\alpha \\
trans-1,3-Dichloropropene Bromoform Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND (L) ND (
Ethyl benzene Xylene, total	ug/L ug/L	0.5 0.5	ND

Method Detection Limit Not detected at or above the MDL. MDL ND



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
INORGANIC ANALYSES DATA

Samples Collected 5/20/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



### EXECUTIVE SUMMARY

Results were qualified as estimated for barium, antimony in S1-23FB, arsenic in S1-23, lead, magnesium, sodium, and thallium.

Zinc results were qualified as less than their reported values.

Validation of inorganic laboratory data is conducted in conformance with Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (2/89) and associated checklist. These guidelines and checklist are intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the USEPA's Contract Laboratory Program (CLP) and assumes that the data package is presented in accordance with the CLP requirements. In addition, the data package is assumed to represent the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of analyses are reported by the laboratory as either qualified or unqualified. Unqualified results mean that the reported values may be used without reservations. Qualified results indicate a nonroutine (with respect to CLP procedures) situation occurred during the course of analysis. qualifier codes associated with the numerical results are used by the laboratory to denote specific information regarding the analytical results. During the process of validation, laboratory qualified and unqualified data are verified against supporting documentation. Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified results still mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.



These codes are used on the accompanying data summary sheets to qualify some of the results.



### Inorganic Data Validation

for

### Environmental Project Control, Inc.

### Samples Collected 5/20/91

### Case Narrative

This group contained five water samples including one field blank. The samples were analyzed for total metals and cyanide except for S1A-21 and S2-21 which were analyzed for only iron and manganese.

Samples validated in this report are noted below:

Client ID	<u>Lab ID</u>	Date of Collection
S1-23	3764	5/20/91
S1-23FB	3766	5/20/91
S1A-21	3768	5/20/91
S2-21	3769	5/20/91
S6-23	3767	5/20/91



The areas reviewed during validation are listed below.

### CLP Inorganics Data Validation

I.	Holding	, Times
----	---------	---------

- II. Calibration
- III. Blanks
- IV. ICP Interference Check Sample
  - V. Matrix Spike Sample Analysis
- VI. Duplicate Sample Analysis
- VII. Laboratory Control Sample Analysis
- VIII. Furnace Atomic Absorption Analysis
  - IX. ICP Serial Dilution Analysis
  - X. Detection Limits
  - XI. Sample Result Verification
- XII. Overall Assessment



#### Data Validation

### I. Holding Times

Samples were analyzed within acceptable holding times.

### II. Calibration

The CRDL recoveries for chromium were 150% and 130%. Since no chromium was detected, no data were qualified.

### III. Blanks

A continuing calibration blank contained zinc at 3.0 ug/L while the preparation blank had a response of -3.0 ug/L which was less than the negative IDL. No data were qualified.

Zinc was found in the field blank above its CRDL (20 ug/L) at 34.0 ug/L. Zinc results were qualified as less than their reported values.

Lead was found in the preparation blank at 2.3 ug/L. Since no lead was found in the samples, no data were qualified.

### IV. ICP Interference Check Sample

The ICS results were satisfactory.

### V. Matrix Spike Sample Analysis

Matrix spike analyses were conducted on S1-23. Results were out of acceptable limits for barium (9%) and thallium (66%). Barium and thallium results were qualified as estimated.

### VI. Duplicate Sample Analysis

Duplicate analyses were conducted on S1-23. Results were satisfactory.

### VII. Laboratory Control Sample Analysis

LCS results were satisfactory.



### VIII. Furnace Atomic Absorption Analysis

Analytical spike recoveries were out of acceptable limits for:

<u>Metal</u>	<u>Sample</u>	<pre>% Recovery</pre>
Antimony	S1-23FB	75
Arsenic	S1-23	118
Lead	S1-23	80
Lead	S6-23	74
Thallium	S1-23	70
Thallium	S6-23	75

These results were qualified estimated.

### IX. ICP Serial Dilution Analysis

Correspondence of serial dilution analyses were out of acceptable limits for magnesium (16%) and sodium (13%). Magnesium and sodium results were qualified estimated.

### X. Detection Limits

IDL's were less than the CRDL's.

### XI. Sample Result Verification

Calculations were performed correctly.

### XII. Overall Assessment

Data were considered valid with the following exceptions:

Zinc results were qualified as less than their reported values due to contamination in the field blank.

Barium and thallium results were qualified as estimated based on matrix spike recoveries.

Due to poor analytical spike recoveries, results were qualified estimated for antimony in S1-23FB, arsenic in S1-23, lead in S1-23 and S6-23, and thallium in S1-23 and S6-23.

Magnesium and sodium results were qualified estimated due to serial dilution results.

### DATA SUMMARY FORM: INORGANICS

Page 1 of 1

Site Name. Wells G & H

### WATER SAMPLES (ug/L)

Case # 810521.500

Sampling Date(s): 5/20/91

	Sample No.	3764&3	75€	3766		3768		3769		3767&3	759						
Dilution Factor		1		1		1		1		1							
	Location	S1-23	_	S1-23F	В	S1A-21		S2-21		S6-23							
ì	Lab ID																
	į	}		ļ			ļ										
CRDL																ļ	
200	Aluminum					N/R		N/R					T		I		
60	Antimony			0.8	UJ	N/R		N/R					T"				
10	*Arsenic	1.0	UJ			N/R		N/R									
	Barium	17.0	J			N/R		N/R		18.0	J						
	Beryllium					N/R		N/R									
	*Cadmium					N/R		N/R									
5000	Calcium	90500				N/R		N/R		90500							
10	*Chromium					N/R		N/R									
50	Cobalt					N/R		N/R									
25	Copper	100	<u> </u>			N/R		N/R		6.0							
	Iron	215				2360											
3	*Lead	0.5	UJ			N/R		N/R		0.5	UJ						
5000	Magnesium	10700	J			N/R		N/R		10000	J						
	Manganese				l 	240		2.0	<u>.</u>								
	Mercury					N/R		N/R									
40	*Nickel					N/R		N/R		•							
5000	Potassium	2570				N/R		N/R		2960		 <u> </u>					
5	Selenium					N/R		N/R									
10	Silver					N/R		N/R						L			
	Sodium	76600	J			N/R		N/R		79700							
	Thallium	06	UJ	ļ ·		N/R		N/R			UJ						
50	Vanadıum					N/R		N/R		5.0							
	Zinc	122	U	34.0		N/R		N/R		120	U						
10	*Cyanide			<u> </u>		N/R		N/R	L			<u></u>					

\*Action Level Exists

N/R = Not Required

### 1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

	00021	
		S1-23
Name: PACE_INCORPORATED	Contract: EPC	

hatrix (soil/water): WATER Lab Sample ID: 3764.1\_\_\_\_

Tab Code: \_\_\_\_ SAS No.: \_\_\_ SDG No.: \_\_\_

evel (low/med): LOW\_\_\_ Date Received: 05/21/91

% Solids: \_\_\_\_0

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

	CAS No.	Analyte	Concentration	С	Q	М
	7429-90-5	Aluminum	195	บิ		P
	7440-36-0	Antimony_	0.80	U		F_
	7440-38-2	Arsenic	1.0	U	JYJ	F
	7440-39-3	Barium _	17.0	8	LX	P_
	7440-41-7	Beryllium	1.1	U		P_
	7440-43-9	Cadmium	3.0	ַ ט		P
	7440-70-2	Calcium	90500	,		P_
	7440-47-3	Chromium	9.5	บิ		P
	7440-48-4	Cobalt	6.4	U		P
	7440-50-8	Copper	10	8		P_
	7439-89-6	Iron	215			P_
	7439-92-1	Lead	0.50	Ū	_ له تهتر	F_
	7439-95-4	Magnesium	10700			P_
	7439-96-5	Manganese	1.5_	ប		P
	7439-97-6	Mercury	0.20	U		cv
	7440-02-0	Nickel	8.6	U		P_
	7440-09-7	Potassium	2570	B		P_
	7782-49-2	Selenium_	0.50	U		F_
	7440-22-4	Silver	8.1	U		P_
	7440-23-5	Sodium	76600	_	ZJ_	P_
	7440-28-0	Thallium_	0.60	ן ֿט	WAJ_	F_
ı	7440-62-2	Vanadium_	4.2_	<b>ט</b>		P_
	7440-66-6	Zinc	122	_]	$\overline{u}$	P_
İ		Cyanide		_		NR
				_		

olor	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
or	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
omme.	nts:		•				

### U.S. EPA - CLP

<b>\</b>		INORGANIC A	l ANALYSES DATA	SHEET	ЕРА 0 0 <u>0 2 2</u>	SAMPLE NO.
ah Name: PAC	F INCORPORAT		Contract: E			S1-23
			SAS No.			No.:
an code			OAD NO.	•	550	
atrix (soil/	water): WATE	R		Lab S	ample ID	: 3756.0
evel (low/med	d): LOW_	_		Date	Received	: 05/21/91
Solids:	<u> </u>	0				
Co	oncentration	Units (ug,	/L or mg/kg dry	y weig	ht): UG/	L_
	1	T	r		<del></del> 1	
	CAS No.	Analyte	Concentration	C Q	M	
	7429-90-5	Aliminim		-	$  _{\overline{NR}}$	
		Antimony_		-	- NR	
	7440-38-2			-	$ _{NR}^{RR} $	
	7440-38-2			-	- NR	
		Beryllium		-	NR	
	7440-43-9			-	NR NR	
	7440-70-2			-	NR	
	7440-47-3			-	NR	
		Cobalt		-	NR	
		Copper		-	NR	
		Iron	<del></del>	-	NR	
		Lead			NR	
		Magnesium		-	NR	
		Manganese			NR	
		Mercury		-	NR	
	li .	Nickel			NR	
		Potassium			NR	
	7782-49-2			-	NR	
	7440-22-4				NR	
		Sodium		-	NR	
	7440-28-0				NR	
	7440-62-2	Vanadium_			NR	
	7440-66-6	Zinc			NR	
		Cyanide	10	<u></u>	AS	
olor Before:	COLORLESS	Clarit	y Before: CLEA	 \R	Text	ıre:
lor After:	COLORLESS	Clarit	y After: CLEA	lR_	Artii	facts:
omments:						

# 1 INORGANIC ANALYSES DATA SHEET 0.0023

DEA SMILLE NO.	EPA	SAMPLE	NO.
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			0	0023	S1-23FB
ab Name: PAC	E_INCORPORAT	red	Contract: E	PC	
ab Code:	Ca	se No.:	SAS No.	:	SDG No.:
atrix (soil/	water): WATE	ER		Lab Samp	le ID: 3766.8
evel (low/me	d): LOW_			Date Rec	eived: 05/21/91
Solids:	<del></del>	.0	•		
C	oncentration	Units (ug	/L or mg/kg dr	y weight)	: UG/L_
	CAS No.	Analyte	Concentration	C Q	м
				_	
	7429-90-5			U	P_
	7440-36-0	Antimony_	0.80_	U	F_
	7440-38-2	Arsenic	1.0	U	F_
	7440-39-3	Barium		U	P_
		Beryllium	1.1_	U	P_
	7440-43-9	Cadmium	3.0_	U	P_
	7440-70-2	Calcium	448_		P_
	7440-47-3	Chromium_	9.5		P_
	7440-48-4	Cobalt	6.4_		P_
	7440-50-8	Copper	4.5	U	P_
	7439-89-6	Iron	97.7	U	P_
	7439-92-1	Lead		U	P
	7439-95-4	Magnesium	509	บ	P_
	7439-96-5	Manganese	1.5	ַ	P
	7439-97-6	Mercury	0.20	ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ ַ	cv
	7440-02-0	Nickel	8.6_	ַ ע	P_
	7440-09-7	Potassium	760	ַ <u></u>	P_
	7782-49-2	Selenium_	0.50	ַ <u></u>	P_
	7440-22-4	Silver	8.1	ָ ט	P
	7440-23-5	Sodium	390	ט	P
		Thallium	0.60	ט	P
	7440-62-2	Vanadium_		U	P
	7440-66-6	Zinc	34.0	]	P
		Cyanide			NR
lor Before:	COLORLESS	Clarit	y Before: CLEA	AR_	Texture:
lor After:	COLORLESS	Clarit	y After: CLEA	iR_	Artifacts:
mments:					
<del>- ,</del>					

	1			EPA	SAMPLE	NO.
INORGANIC	ANALYSES	DATA	SHEET	 		

	INORGANIC AN	ALISES DATA SHEET OF O	
		0002	S1-23FB
.ab Name: PACE_INCOR	PORATED	Contract: EPC	
hab Code:	Case No.:	SAS No.:	SDG No.:
ratrix (soil/water):	WATER	Lab Sample	e ID: 3758.7
evel (low/med):	LOW	Date Rece	ived: 05/21/91
% Solids:	0		

Concentration Units (ug/L or mg/kg dry weight): UG/L\_

			_		$\overline{}$
CAS No.	Analyte	Concentration	С	Q	М
7429-90-5	Aluminum		-		$\overline{NR}$
7440-36-0	Antimony		-		NR
7440-38-2	Arsenic		-		NR
7440-39-3	Barium		-		NR
7440-41-7	Beryllium		-		NR
7440-43-9	Cadmium		-		NR
7440-70-2	Calcium	<del></del>	-		NR
7440-47-3	Chromium		-		NR
7440-47-3	Cobalt		-		NR
7440-50-8			_		NR
7439-89-6	Copper		-		NR
7439-89-6	Lead				NR
]			-		NR
7439-95-4	Magnesium		-		NR
7439-96-5	Manganese		-		NR
7439-97-6	Mercury		-		
7440-02-0	Nickel				NR
7440-09-7	Potassium		-		NR
7782-49-2	Selenium_		_		NR
7440-22-4	Silver		_		NR
7440-23-5	Sodium		_		NR
7440-28-0	Thallium_		_		NR
7440-62-2	Vanadium_		_		NR
7440-66-6	Zinc		_]		NR
	Cyanide	10_	บิ		AS
	_		_ [		

color	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:	
lor	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:	
:^mmer	nts:						

# INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.

			•	_		S1A-21
ab Name: PAC	E_INCORPORAT	red	Contract: E	PC		318-21
ab Code:	Ca	ase No.:	SAS No.	:		SDG No.:
atrix (soil/	water): WATE	ER		Lab	Sampl	e ID: 3768.4
evel (low/me	d): LOW_			Date	e Rece	eived: 05/21/91
Solids:		_0				
С	oncentration	Units (ug	/L or mg/kg dr	y we	ight):	UG/L_
	CAS No.	Analyte	Concentration	С	Q	M
				_ _		
	7429-90-5			_ _		NR
		Antimony_		_ _		NR
	7440-38-2			_ _		NR
	7440-39-3			- -		NR
		Beryllium	 	- -		NR
	7440-43-9			_ _		NR
	7440-70-2	· —		<u> - -</u>		NR
		Chromium_		- -		NR
	7440-48-4			-		NR
	7440-50-8		2260	1-1-		NR
	7439-89-6 7439-92-1	Iron	2360_	1-1-		P_  - NR
	7439-92-1	Lead		l-l-		NR NR
	7439-95-4	Magnesium Manganese	24.0	- -		P
		Mercury	24.0_	-		NR
		Nickel		- -		NR I
	E .	Potassium		- -		NR I
	7782-49-2			-  <b>-</b> -		NR
		Silver_		-  <del>-</del>		NR
		Sodium		-		NR NR
		Thallium		- -		NR
	7440-62-2	Vanadium		- -		NR
	7440-66-6	Zinc		- -		NR
•		Cyanide				NR
	[	Il			.	_
lor Before:	COLORLESS	Clarit	y Before: CLEA	AR_	•	Texture:
	COLORLESS	Clarit	y After: CLEA	AR_	i	Artifacts:
or After:						

		INORGANIC A	1 ANALYSES DATA	SHEETO 2	EPA SAMPLE NO.
					S2-21
1 b Name: PACE	_INCORPORAT	ED	Contract: E	PC	_
Lab Code:	Ca	se No.:	SAS No.	:	SDG No.:
Ltrix (soil/w	ater): WATE	R		Lab Sam	ple ID: 3769.2
. vel (low/med	): LOW_	<del>-</del>		Date Re	ceived: 05/21/91
Solids:		0			
Co	ncentration		/L or mg/kg dr		): UG/L_
	CAS No.	Analyte	Concentration	C Q	M
	7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-23-5	Antimony_Arsenic_Barium_Beryllium Cadmium_Calcium_Chromium_Cobalt_Copper_Iron_Lead_Magnesium Manganese Mercury_Nickel_Potassium	97.7_	Ū	NR NR NR NR NR NR NR NR NR NR NR NR NR N
	7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2	Nickel			NR NR NR NR NR NR NR NR NR

olor	Before:	COLORLESS	Clarity	Before:	CLEAR_	Texture:
or or	After:	COLORLESS	Clarity	After:	CLEAR_	Artifacts:
mmer	its:					

### 1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET. -

			ANALYSES DATA	00027	
ab Name: PAC	E_INCORPORAT		Contract: E		S6-23
	_				SDG No.:
atrix (soil/	water): WATE	CR CR		Lab Sam	ple ID: 3767.6
evel (low/me	d): LOW_	<del></del>		Date Red	ceived: 05/21/91
Solids:		0	,		
С	oncentration	Units (ug,	/L or mg/kg dry	y weight	): UG/L_
	CAS No.	Analyte	Concentration	C Q	M
	7429-90-5	Aluminum	195	<u> </u>	-  <del>-</del> -
	7440-36-0	Antimony_		ט –	P_
	7440-38-2	Arsenic		<u>"</u>	F F
	7440-38-2	Barium		BY J	F_ P_ P_
	7440-33-3	Beryllium	1.1	ע יאין ש	-   5-
	7440-43-9	Cadmium	3.0	ט	- P
	7440-70-2	Calcium	90500	•	-  5-
	7440-47-3	Chromium	9.5	<u>u</u>	P P
	7440-48-4	Cobalt	6.4	บ	P_
	7440-50-8	Copper		8	P_
	7439-89-6	Iron	97.7	<u>"</u>	P_
	7439-92-1	Lead		UNJ	-   F_
	7439-95-4	Magnesium	10000		P_
	7439-96-5	Manganese	1.5	ט	- P
	7439-97-6	Mercury		บ	CV
	7440-02-0	Nickel		ט	P_
	7440-09-7	Potassium		ğ ——	-   P
		Selenium		ט	-  F-
	7440-22-4			ט	P
	1	Sodium	79700_	ZJ	P
	7440-28-0		0.60	U JAKU	F_
	7440-62-2	Vanadium_	5.0		[P_
	7440-66-6	Zinc	120	u	P
		Cyanide		-	NR
					:[
olor Before:	COLORLESS	Clarit	y Before: CLEA	R_	Texture:
lor After:	COLORLESS	Clarit	y After: CLEA	R_	Artifacts:
mments:					

### U.S. EPA - CLP

## INORGANIC ANALYSES DATA SHEET

EPA	SAMPLE	NO.

			INORGANIC .	ANALYSES DATA	SHEET 0 0 0 2 8	
ab Na	me: PAC			Contract: E		S6-23
						SDG No.:
atrix	(soil/	water): WATE	R		Lab Samp	ole ID: 3759.5
evel	(low/med	d): LOW_	_		Date Rec	eived: 05/21/91
Soli	ds:	<u></u>	0			
	Co	oncentration	Units (ug,	/L or mg/kg dry	y weight)	: UG/L_
		CAS No.	Analyte	Concentration	C Q	м
		7420 00 5	3 2		_	
		7429-90-5 7440-36-0	Aluminum_		-	NR
		7440-38-0	Antimony_ Arsenic		-	NR NR
		7440-38-2	Barium		-	NR
		7440-41-7	Beryllium			NR
		7440-43-9	Cadmium		-	NR
		1	Calcium_			NR
		7440-47-3	Chromium			NR
			Cobalt		-	NR
		7440-50-8	Copper			NR
		7439-89-6	Iron			NR
		7439-92-1	Lead			NR
		7439-95-4	Magnesium			NR
		7439-96-5	Manganese			NR
		7439-97-6	Mercury			NR
		7440-02-0	Nickel			NR
			Potassium			NR
			Selenium_			NR
			Silver		_	NR
		l.	Sodium		_	NR
		l i	Thallium_			NR
		7440-62-2	Vanadium_			NR
		7440-66-6	Zinc			NR
		-	Cyanide	10_	<u>u</u>	AS
olor E	Before:	COLORLESS	Clarit	y Before: CLEA	R_	Texture:
or A	fter:	COLORLESS	Clarit	y After: CLEA	R_	Artifacts:
· ·mment	:s:					



### DATA VALIDATION REPORT

FOR

WELLS G&H PROJECT

TREATMENT SYSTEM SAMPLING

SEMIVOLATILES ANALYSIS DATA Samples Collected May 20, 1991

Chemical Analyses Performed by:

PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No semivolatile target compounds were detected in Samples S1-23, S1-23 FB, or S6-23. The only reported tentatively identified compound, in Sample S1-23, was rejected. Detection limits for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in all three samples; detection limits for 3-nitroaniline were estimated in all three samples. The detection limit for pyrene was estimated in Sample S1-23.

Problems identified on the Chain of Custody (COC) records include: (1) 3 COC's are included although only 2 are pertinent to this data package; (2) affiliations are not included with any of the transfer signatures; (3) cold storage of the samples is not documented; (4) separate entries should not be made for MS/MSD samples; and (5) documentation of corrections is inconsistent. In addition, the Case Narrative states that the samples were received at the laboratory on May 20, 1991; it is clear from the COC records that the samples did not arrive until May 21, 1991.

Validation of the data package is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator-qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying Form I's copied from the data packages to qualify some of the results as appropriate based on the findings of the data review.



### Case Narrative

Five water samples (including separate samples for matrix spike/matrix spike duplicate) were collected on May 20, 1991 and received by Pace, Inc. on May 21, 1991. Analysis of semivolatile organic compounds according to EPA Contract Laboratory Program (CLP) Statement of Work 2/88 was performed.

The following samples are included in this Sample Delivery Group (SDG):

Client ID	<u>Lab ID</u>	<u>Collection Date</u>
S1-23	3749	5/20/91
S1-23 FB	3750	5/20/91
S6-23	3751	5/20/91

Semivolatiles analysis results for these samples were reported by the laboratory under Project Number 810521.500.



### Semivolatiles

The areas reviewed during the semivolatiles validation procedure are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
- XII. System Performance
- XIII. Overall Assessment



### I. Holding Times

All samples were extracted and analyzed within the established holding times.

The COC records do not indicate that the samples were placed in cold storage in the field, at the time of collection. It can be inferred that the samples were placed in coolers from the notations of cooler temperatures made on 5/21/91 on the COC's. Cold storage is a form of preservation and must be documented, or the validator must assume it was not performed. No qualifiers are applied to the results in this case.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be done as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No internal standard (IS) or surrogate peaks were manually integrated; data do not appear to be affected.

### A. Initial

All samples in this SDG were analyzed under an initial calibration (IC) performed on 6/19/91. All criteria were met for this calibration with the exception of the Percent Relative Standard Deviation (%RSD) for 4-chloroaniline (37.5), 3-nitroaniline (41.4), and 3,3'-dichlorobenzidine (44.7). No data are affected.

### B. Continuing

The samples in this SDG were also run under two continuing calibration (CC) standards, on 6/20/91 and 6/21/91. Criteria were met for the 6/20 calibration with the exception of the RF's for 4-nitroaniline (0.046) and 3,3'-dichlorobenzidine (0.033), both of which were below the minimum required RF of 0.05, and the %D for 3,3'-dichlorobenzidine (56.2), 2,4-dinitrophenol (43.8), 4-nitroaniline (45.4), 3-nitroaniline (56.9), and pyrene (50.7). Detection limits for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in Sample S1-23; detection limits for 3-nitroaniline and pyrene are estimated "UJ" in the same sample.



All criteria were met in the 6/21/91 calibration except the RF's for 4-nitroaniline (0.045) and 3,3'-dichlorobenzidine (0.048), and the %D for 3-nitroaniline (64.2), 2,4-dinitrophenol (43.8), 2,4-dinitrotoluene (26.6), 4-nitroaniline (46.4), and 3,3'-dichlorobenzidine (36.8). Detection limits for 4-nitroaniline and 3,3'-dichlorobenzidine were rejected in Samples S1-23 FB and S6-23, and detection limits for 3-nitroaniline were estimated in these two samples.

#### IV. Blanks

No target or tentatively identified compounds were detected in SBLK1, extracted 5/24 and analyzed 6/21.

No target compounds or reportable TIC's were detected in the field blank, S1-23 FB.

### V. Surrogate Recovery

All surrogate recoveries were within established acceptance limits.

### VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on Sample S1-23. All Percent Recovery (%R) and Relative Percent Difference (RPD) values were within established QC criteria except %R for 2,4-dinitrotoluene (actual 115%, limits 24-96%) and pentachlorophenol (actual 107%, limits 9-103%) in the MS and %R for 2,4-dinitrotoluene (97%) in the MSD. Since these recoveries are only slightly high and are consistent, no data are qualified.

A very low level of 3-nitroaniline is reported in both the MS and MSD samples (0.7, 0.5 ug/L, respectively); this compound was not detected in the original sample analysis. Due to the low RF for 3-nitroaniline in the CC standards (0.06, 0.07), these positive values in the MS and MSD runs are rejected as false positives, unless spectra can be provided to confirm their presence.

### VII. Field Duplicates

No field duplicate pair was included with this SDG.



### VIII. Internal Standards Performance

All internal standard areas and retention times were within the established QC limits for acceptance.

### IX. TCL Compound Identification

No semivolatile TCL compounds were identified in any of the samples in this SDG.

### X. Compound Quantitation and Reported Detection Limits

Results and quantitation limits are correctly reported; no dilutions were performed in this SDG.

### XI. Tentatively Identified Compounds

One TIC was reported in Sample S1-23, identified as tetrachloroethene. This result is rejected because tetrachloroethene is a volatile target compound, and is more accurately reported in the analysis of that fraction. From the COC, it is apparent that this sample was also analyzed for CLP volatiles.

### XII. System Performance

No system performance problems were observed in the raw data presented in this data package.

### XIII. Overall Assessment

Sample results are usable as reported with the following exceptions:

- 1. Results for 4-nitroaniline and 3,3'-dichlorobenzidine are rejected in all samples due to low RF's.
- 2. Detection limits for 3-nitroaniline are estimated in all samples due to a high %D in both continuing calibrations; detection limits for pyrene are estimated in S1-23 due to a high %D in the first continuing calibration.

Incomplete, unclear, or inaccurate Chain of Custody (COC) records can jeopardize the legal value of sample results regardless of the technical quality of the data. The following problems were observed on the COC records included in this data package:



- 1. More custody records are included than are pertinent to this package; this could cause confusion as to the disposition of the rest of the data requested on the COC's.
- 2. Transfer signatures are incomplete: the affiliation of the person involved is not included for any of the signatures.
- 3. Documentation of corrections to the forms is inconsistentsome cross-outs are initialled and dated, and some are not.
- 4. Cold storage is not documented, except for references to cooler temperatures added to the COC's on 5/21/91.
- 5. MS/MSD analyses are a <u>laboratory-initiated</u> quality control activity; there should not be separate samples on the COC identified as "MS" and "MSD".

Manually integrated areas should be documented in the data package to allow review of the integration method used.

S1-23

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: SDG No. 000019

Lab Sample ID: 3749.8 atrix: (soil/water) WATER

cample wt/vol: 1000. (g/mL) ML Lab File ID: D2755

Level: (low/med) LOW Date Received: 5/21/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/kg	)) UG/L	Q
			<del></del>	

108-95-2Phenol		<del></del>	
95-57-82-Chlorophenol 10. U 541-73-11,3-Dichlorobenzene 10. U 106-46-71,4-Dichlorobenzene 10. U 100-51-6Benzyl alcohol 10. U 95-50-11,2-Dichlorobenzene 10. U 95-48-72-Methylphenol 10. U 106-44-54-Methylphenol 10. U 106-44-54-Methylphenol 10. U 621-64-7N-Nitroso-di-n-propylamine 10. U 621-64-7Hexachloroethane 10. U 98-95-3Nitrobenzene 10. U 98-95-3Nitrobenzene 10. U 105-67-92-Nitrophenol 10. U 105-67-92-Nitrophenol 10. U 11-91-1bis(2-Chloroethoxy)methane 10. U 120-82-11,2,4-Trichlorobenzene 10. U 120-82-11,2,4-Trichlorobenzene 10. U 106-47-8	108-95-2Phenol	10.	U
95-57-82-Chlorophenol 10. U 541-73-11,3-Dichlorobenzene 10. U 106-46-71,4-Dichlorobenzene 10. U 100-51-6Benzyl alcohol 10. U 95-50-11,2-Dichlorobenzene 10. U 95-48-72-Methylphenol 10. U 106-44-54-Methylphenol 10. U 106-44-54-Methylphenol 10. U 621-64-7N-Nitroso-di-n-propylamine 10. U 67-72-1Hexachloroethane 10. U 98-95-3Nitrobenzene 10. U 98-95-3Nitrobenzene 10. U 105-67-92-Nitrophenol 10. U 105-68-0Benzoic acid 50. U 111-91-1	111-44-4bis(2-Chloroethyl)ether	10.	บ
10.   U   106-46-71,4-Dichlorobenzene   10.   U   100-51-6Benzyl alcohol   10.   U   100-51-6Benzyl alcohol   10.   U   95-50-11,2-Dichlorobenzene   10.   U   108-60-1bis(2-Chloroisopropyl)ether   10.   U   108-60-1	95-57-82-Chlorophenol		U
106-46-71,4-Dichlorobenzene		10.	U
100-51-6Benzyl alcohol   10.   U   95-50-11,2-Dichlorobenzene   10.   U   95-48-72-Methylphenol   10.   U   108-60-1bis(2-Chloroisopropyl) ether   10.   U   106-44-54-Methylphenol   10.   U   106-44-5Hexachloroethane   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.	106-46-71,4-Dichlorobenzene	10.	U
95-50-11,2-Dichlorobenzene 10. U 95-48-72-Methylphenol 10. U 108-60-1bis(2-Chloroisopropyl)ether 10. U 106-44-54-Methylphenol 10. U 621-64-7N-Nitroso-di-n-propylamine 10. U 67-72-1Hexachloroethane 10. U 98-95-3Nitrobenzene 10. U 88-75-52-Nitrobenzene 10. U 105-67-92,4-Dimethylphenol 10. U 105-67-92,4-Dimethylphenol 10. U 111-91-1bis(2-Chloroethoxy)methane 10. U 120-83-22,4-Dichlorophenol 10. U 120-82-11,2,4-Trichlorobenzene 10. U 91-20-3Naphthalene 10. U 106-47-84-Chloroaniline 10. U 107-47-44-Chloro-3-methylphenol 10. U 91-57-62-Methylnaphthalene 10. U 88-06-22,4,6-Trichlorophenol 10. U 95-95-42-Nethylnaphthalene 10. U 95-95-42-Nethylnaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Chloronaphthalene 10. U	100-51-6Benzyl alcohol	10.	U
10.   U   108-60-1	95-50-11,2-Dichlorobenzene	10.	U
108-60-1bis(2-Chloroisopropyl) ether       10. U         106-44-54-Methylphenol       10. U         621-64-7N-Nitroso-di-n-propylamine       10. U         67-72-1Hexachloroethane       10. U         98-95-3Nitrobenzene       10. U         78-59-1Isophorone       10. U         88-75-52-Nitrophenol       10. U         105-67-92,4-Dimethylphenol       10. U         65-85-0Benzoic acid       50. U         111-91-1bis(2-Chloroethoxy)methane       10. U         120-83-22,4-Dichlorophenol       10. U         120-82-11,2,4-Trichlorobenzene       10. U         91-20-3Naphthalene       10. U         106-47-8	95-48-72-Methylphenol	•	U
106-44-54-Methylphenol	108-60-1bis(2-Chloroisopropyl)ether	10.	U
621-64-7N-Nitroso-di-n-propylamine 10. U 67-72-1Hexachloroethane 10. U 98-95-3Nitrobenzene 10. U 78-59-1Isophorone 10. U 10. U 10. 65-85-0	106-44-54-Methylphenol	10.	
67-72-1Hexachloroethane       10.       U         98-95-3Nitrobenzene       10.       U         78-59-1Isophorone       10.       U         88-75-52-Nitrophenol       10.       U         105-67-92,4-Dimethylphenol       10.       U         65-85-0Benzoic acid       50.       U         111-91-1bis(2-Chloroethoxy)methane       10.       U         120-83-22,4-Dichlorophenol       10.       U         120-82-11,2,4-Trichlorobenzene       10.       U         91-20-3Naphthalene       10.       U         106-47-8	621-64-7N-Nitroso-di-n-propylamine	10.	U
10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.	67-72-1Hexachloroethane	10.	U
10.   U   105-67-92,4-Dimethylphenol   10.   U   65-85-0Benzoic acid   50.   U   111-91-1bis(2-Chloroethoxy)methane   10.   U   120-83-22,4-Dichlorophenol   10.   U   120-82-11,2,4-Trichlorobenzene   10.   U   120-82-1Naphthalene   10.   U   106-47-8	98-95-3Nitrobenzene	10.	U
10.   U   105-67-92,4-Dimethylphenol   10.   U   65-85-0Benzoic acid   50.   U   111-91-1bis(2-Chloroethoxy)methane   10.   U   120-83-22,4-Dichlorophenol   10.   U   120-82-11,2,4-Trichlorobenzene   10.   U   120-82-1Naphthalene   10.   U   106-47-8Hexachlorobutadiene   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.   U   10.	78-59-1Isophorone	10.	U
10. U 65-85-0Benzoic acid 111-91-1bis(2-Chloroethoxy)methane 120-83-22,4-Dichlorophenol 120-82-11,2,4-Trichlorobenzene 10. U 91-20-3Naphthalene 10. U 106-47-8Hexachlorobutadiene 10. U 87-68-3Hexachlorobutadiene 10. U 91-57-62-Methylnaphthalene 10. U 91-57-62-Methylnaphthalene 10. U 95-95-42,4,6-Trichlorophenol 10. U 95-95-42,4,5-Trichlorophenol 10. U 91-58-72-Chloronaphthalene 10. U 91-58-72-Nitroaniline 10. U 131-11-3Dimethylphthalate 10. U 10. U 111-11-3	88-75-52-Nitrophenol	10.	U
111-91-1bis(2-Chloroethoxy)methane	105-67-92,4-Dimethylphenol	10.	U
120-83-22,4-Dichlorophenol       10. U         120-82-11,2,4-Trichlorobenzene       10. U         91-20-3Naphthalene       10. U         106-47-84-Chloroaniline       10. U         87-68-3Hexachlorobutadiene       10. U         59-50-74-Chloro-3-methylphenol       10. U         91-57-62-Methylnaphthalene       10. U         88-06-22,4,6-Trichlorophenol       10. U         95-95-42,4,5-Trichlorophenol       50. U         91-58-72-Chloronaphthalene       10. U         88-74-42-Nitroaniline       50. U         131-11-3Dimethylphthalate       10. U         208-96-8Acenaphthylene       10. U	65-85-0Benzoic acid	50.	U
120-82-11,2,4-Trichlorobenzene	111-91-1bis(2-Chloroethoxy) methane	10.	U
120-82-11,2,4-Trichlorobenzene	120-83-22,4-Dichlorophenol	10.	U
91-20-3Naphthalene       10. U         106-47-84-Chloroaniline       10. U         87-68-3Hexachlorobutadiene       10. U         59-50-74-Chloro-3-methylphenol       10. U         91-57-62-Methylnaphthalene       10. U         77-47-4Hexachlorocyclopentadiene       10. U         88-06-22,4,6-Trichlorophenol       10. U         95-95-42,4,5-Trichlorophenol       50. U         91-58-72-Chloronaphthalene       10. U         88-74-42-Nitroaniline       50. U         131-11-3Dimethylphthalate       10. U         208-96-8Acenaphthylene       10. U	120-82-11.2.4-Trichlorobenzene	10.	
106-47-84-Chloroaniline       10. U         87-68-3Hexachlorobutadiene       10. U         59-50-74-Chloro-3-methylphenol       10. U         91-57-62-Methylnaphthalene       10. U         77-47-4Hexachlorocyclopentadiene       10. U         88-06-22,4,6-Trichlorophenol       10. U         95-95-42,4,5-Trichlorophenol       50. U         91-58-72-Chloronaphthalene       10. U         88-74-42-Nitroaniline       50. U         131-11-3Dimethylphthalate       10. U         208-96-8Acenaphthylene       10. U	91-20-3Naphthalene	10.	U
59-50-74-Chloro-3-methylphenol       10. U         91-57-62-Methylnaphthalene       10. U         77-47-4Hexachlorocyclopentadiene       10. U         88-06-22,4,6-Trichlorophenol       10. U         95-95-42,4,5-Trichlorophenol       50. U         91-58-72-Chloronaphthalene       10. U         88-74-4Dimethylphthalate       10. U         131-11-3Acenaphthylene       10. U	106-47-84-Chloroaniline	10.	U
91-57-62-Methylnaphthalene 10. U 77-47-4Hexachlorocyclopentadiene 10. U 88-06-22,4,6-Trichlorophenol 10. U 95-95-42,4,5-Trichlorophenol 50. U 91-58-72-Chloronaphthalene 10. U 88-74-42-Nitroaniline 50. U 131-11-3Dimethylphthalate 10. U 208-96-8Acenaphthylene 10. U	87-68-3Hexachlorobutadiene	10.	U
77-47-4Hexachlorocyclopentadians  88-06-22,4,6-Trichlorophenol 95-95-42,4,5-Trichlorophenol 91-58-72-Chloronaphthalene 88-74-42-Nitroaniline 131-11-3Dimethylphthalate 208-96-8Acenaphthylene	59-50-74-Chloro-3-methylphenol	10.	U
77-47-4Hexachlorocyclopentadiene 10. U 88-06-22,4,6-Trichlorophenol 10. U 95-95-42,4,5-Trichlorophenol 50. U 91-58-72-Chloronaphthalene 10. U 88-74-42-Nitroaniline 50. U 131-11-3Dimethylphthalate 10. U 208-96-8Acenaphthylene 10. U	91-57-62-Methylnaphthalene	10.	וֹט
95-95-42,4,5-Trichlorophenol       50.       U         91-58-72-Chloronaphthalene       10.       U         88-74-42-Nitroaniline       50.       U         131-11-3Dimethylphthalate       10.       U         208-96-8Acenaphthylene       10.       U	77-47-4Hevachlorocyclopentadiene	ıõ.	ប៊
95-95-42,4,5-Trichlorophenol       50.       U         91-58-72-Chloronaphthalene       10.       U         88-74-42-Nitroaniline       50.       U         131-11-3Dimethylphthalate       10.       U         208-96-8Acenaphthylene       10.       U	88-06-22,4,6-Trichlorophenol	10.	U
91-58-72-Chloronaphthalene 10. U 88-74-42-Nitroaniline 50. U 131-11-3Dimethylphthalate 10. U 208-96-8Acenaphthylene 10. U	95-95-42,4,5-Trichlorophenol	50.	U
131-11-3Dimethylphthalate 10. U 208-96-8Acenaphthylene 10. U	91-58-72-Chloronaphthalene	10.	U
208-96-8Acenaphthylene10. U		50.	
208-96-8Acenaphthylene10. U	131-11-3Dimethylphthalate	10.	U
606-20-22,6-Dinitrotoluene10. U	208-96-8Acenaphthylene	10.	U
	606-20-22,6-Dinitrotoluene	10.	U
<del></del>			

S1-23 Contract:

ib Name: PACE

b Code: PACE Case No.: EPC SAS No.: SDG No.:

0000020 latrix: (soil/water) WATER Lab Sample ID: 3749.8

1000. (g/mL) ML Sample wt/vol: Lab File ID: D2755

evel: (low/med) LOW Date Received: 5/21/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91

L:traction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91

CTC Cleanup: (Y/N) N Dilution Factor: pH: 7.0 1.00

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/I

CAS NO.	COMPOUND	(ug/L or	ug/kg)	UG/L		Q ——
99-09-2	3-Nitroaniline			50.	ŧ,	- uJ
83-32-9	Acenaphthene 2,4-Dinitrophe		<del></del>  .	10.	Ū	
51-28-5	2,4-Dinitrophe	nol	<del></del>	50.	U	
100-02-7	4-Nitrophenol			50.	ات	
132-64-9	Dibenzofuran		— I	10.	Ū	
121-14-2	2,4-Dinitrotol	uene		10.	Ū	
84-66-2	Diethvlphthala	te	—-	10.	U	
7005-72-3	4-Chlorophenvl	-phenylethe	<del>r</del>	10.	U	
86-73-7	Fluorene		<del></del> 1	10.	U	_
100-01-6	4-Nitroaniline			-50.	U	$\mathcal{R}$
534-52-1	4,6-Dinitro-2-	methylpheno	1	50.	U	`
86-30-6	N-Nitrosodiphe	nvlamine		10.	Ū	
101-55-3	4-Bromophenyl-	phenylether	<del></del> 1	10.	Ū	_
118-74-1	Hexachlorobenz	ene	-1	10.	Ü	
87-86-5	Pentachlorophe	nol	<del></del>	50.	Ū	
85-01-8	Phenanthrene_		<del></del>	10.	Ū	
120-12-7	Anthracene		<del></del>	10.	Ü	i
84-74-2	Di-n-butylphth	alate	<del></del>	10.	υ	
206-44-0	Fluoranthene			10.	Ū	- 1
129-00-0	Pyrene		<del></del>	10.	<del>U</del> -	UJ
85-68-7	Butylbenzylpht	halate		10.	Ū	
91-94-1	3,3'-Dichlorob	enzidine	<del></del>	20,	<del>-   Ŭ-</del> -	R
56-55-3	Benzo(a) anthrac	cene		10.	Ū	٠, ا
218-01-9	Chrysene			10.	Ū	
117-81-7	bis(2-Ethylhex)	vl)phthalate	<del>-</del>	10.	Ü	
117-84-0	Di-p-octylabth	12+0	<del>-</del> -1	10.	Ü	- (
205-99-2	Di-n-octylphth: Benzo(b)fluora:	thene	<del></del>	10.	Ιū	i
207-08-9	Benzo(k)fluorar	thene	<del></del> j	10.	U	j
50-32-8	Benzo(a)pyrene	iciiciic		10.	Ü	- 1
193-39-5	Indeno(1,2,3-c	1) nyrene		10.	Ü	
53-70-3	Dibenzo(a,h)ant	hracene			Ü	ļ
101-24-2	Benzo(g,h,i)per	arlono	<del></del>	10.	Ü	- 1
131-64-6	benzo(g,n,1)per	. A TELLE	[	10.	10	ĺ

FORM I SV-2

1/87 Rev.

### SEMIVOL THE ORGANICS ANALYSIS DATA SHEET TL..TATIVELY IDENTIFIED COMPOUNDS

S1-23	
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ab Name: PACE

Contract:

0000021

Lab Code: PACE

Case No.: EPC

SAS No.:

SDG No.:

'atrix: (soil/water) WATER

Lab Sample ID: 3749.8

Sample wt/vol:

1000. (g/mL) ML

dec.

Lab File ID: D2755

evel:

(low/med) LOW

Date Received: 5/21/91

% Moisture: not dec.100.

0.

Date Extracted: 5/24/91

xtraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

TPC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	DV. Qualifie	RT	EST. CONC.	Q
1. <del>127-18-4</del>	ETHENE, TETRACHLORO	- R	6.54	300.	J.J.
3		CRE 7/7/	/ <del> </del>		
4 •					
5					
7				·	
9.					
10.					-
1 12.					
13.					
15.				·	
1 1.					
19.					
20.					
44.					
23.		<del></del>			
25.					
26.					
28					
30					
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S1-23 FB

ab Name: PACE Contract:

ab Code: PACE Case No.: EPC SFS No.: 00000250 No.:

Matrix: (soil/water) WATER Lab Sample ID: 3750.1

ample wt/vol: 1000. (g/mL) ML Lab File ID: D2769

Level: (low/med) LOW Date Received: 5/21/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	(ug/L or			Q
108-95-2				10.	U
111-44-4	bis(2-Chloroet	hyl)ether		10.	U
95-57-8	2-Chlorophenol		<del></del>	10.	ט
541-73-1	1,3-Dichlorobe	nzene		10.	U
106-46-7	1.4-Dichlorobe	nzene		10.	ט
100-51-6	Benzvl alcohol			10.	U
95-50-1	1,2-Dichlorobe	nzene		10.	U
95-48-7	2-Methylphenol		<del></del>	10.	U
108-60-1	bis(2-Chlorois	opropyl)ethe	r	10.	U
106-44-5	4-Methylphenol		1	10.	U
621-64-7	N-Nitroso-di-n	-propylamine		10.	U
67-72-1	Hexachloroetha	ne	<u> </u>	10.	U
98-95-3	Nitrobenzene		<u> </u>	10.	U
78-59-1	Isophorone		_	10.	U
88-75-5	2-Nitrophenol			10.	U
105-67-9	2,4-Dimethylph	enol		10.	U
65-85-0	Benzoic acid			50.	U
111-91-1	bis(2-Chloroet	hoxy) methane		10.	U
120-83-2	2,4-Dichloroph	enol		10.	U
120-82-1	1,2,4-Trichlor	obenzene		10.	U
91-20-3	Naphthalene			10.	U
106-47-8	4-Chloroanilin	2	— <sub> </sub>	10.	Ü
87-68-3	Hexachlorobuta	diene	<del>-</del>	10.	U
59-50-7	4-Chloro-3-met	nvlphenol	-	10.	Ū
91-57-6	2-Methylnaphth	alene	_	10.	טו
7/-47-4	Hexachlorocycl	pentadiene	j	10.	Ū
88-06-2	2,4,6-Trichlor	ophenol	_	10.	Ū
95-95-4	2,4,5-Trichlor	ophenol		50.	Ū
91-58-7	2-Chloronaphth	alene	<del>-</del>	10.	บั
88-74-4	2-Nitroaniline		<del>-</del>	50.	Ū
131-11-3	Dimethylphthala	ite	-	10.	Ü
208-96-8	Acenaphthylene		-	10.	lΰ
606-20-2	2,6-Dinitrotoli		<del></del> ]	10.	lΰ

S1-23 FB

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:000028 SDG No.:

atrix: (soil/water) WATER Lab Sample ID: 3750.1

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2769

evel: (low/med) LOW Date Received: 5/21/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91

\_xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91

FOC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

	T'''	<del></del>	
99-09-23-Nitroaniline	50.	U U	J
83-32-9Acenaphthene	10.	U	• -
51-28-52,4-Dinitrophenol	50.	Ū	
100-02-74-Nitrophenol	50.	Ū	
132-64-9Dibenzofuran	10.	Ū	
121-14-22,4-Dinitrotoluene	10.	Ū	
84-66-2Diethylphthalate	10.	Ū	
7005-72-34-Chlorophenyl-phenylether	10.	Ü	
86-73-7Fluorene	10.	Ū _	
100-01-64-Nitroaniline	<del>50.</del>	HO R	2
534-52-14,6-Dinitro-2-methylphenol_	50.	ָט י	`
86-30-6N-Nitrosodiphenylamine	10.	Ū	
101-55-34-Bromophenyl-phenylether	10.	Ū	
118-74-1Hexachlorobenzene	10.	Ū	
87-86-5Pentachlorophenol	50.	Ū	
85-01-8Phenanthrene	10.	Ū	
120-12-7Anthracene	10.	Ū	
84-74-2Di-n-butylphthalate	10.	Ū	
206-44-0Fluoranthene	10.	Ū	
129-00-0Pyrene	10.	ΰ	
85-68-7Butylbenzylphthalate	10.	Ū_	
91-94-13,3'-Dichlorobenzidine	-20	<del>v</del> R	
56-55-3Benzo(a)anthracene	10.	Ü	
218-01-9Chrysene	10.	ΰ	
117-81-7bis(2-Ethylhexyl)phthalate	10.	Ŭ	i
117-84-0Di-n-octylphthalate	10.	ΰ	!
205-99-2Benzo(b) fluoranthene	10.	Ü	ļ
207-08-9Benzo(k) fluoranthene	10.	Ü	
50-32-8Benzo(a) pyrene	10.	Ü	-
193-39-5Indeno(1,2,3-cd)pyrene	10.	Ü	ļ
53-70-3Dibenzo(a,h)anthracene	10.	Ü	
191-24-2Benzo(g,h,i)perylene	10.	Ü	
zor z. z Denzo(g,n,r/peryrene	10.		

FORM I SV-2

1/87 Rev.

### SEMIVOL ILE ORGANICS ANALYSIS DATA SHEET TL..TATIVELY IDENTIFIED COMPOUNDS

TPA SAMPLE NO.

S1-23 FB

ab Name: PACE

Contract:

Tab Code: PACE Case No.: EPC SAS No.: 000029sDG No.:

\_atrix: (soil/water) WATER Lab Sample ID: 3750.1

1000. (g/mL) ML Lab File ID: D2769 Tample wt/vol:

Level: (low/med) LOW Date Received: 5/21/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91

C Cleanup: (Y/N) N Dilution Factor: 1.00 pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		-		
3		-		
4 •				
5		-		<u> </u>
7				
8		-		
9.				
<u> </u>				
13				<u> </u>
14.				
15.		·		ļ
17.				
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20.	· · · · · · · · · · · · · · · · · · ·			
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S6-23

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

0000033 No.:

'atrix: (soil/water) WATER

Lab Sample ID: 3751.0

Sample wt/vol:

1000. (g/mL) ML

Lab File ID: D2768

\_evel: (low/med) LOW

Date Received: 5/21/91

° Moisture: not dec.100. dec. 0.

Date Extracted: 5/24/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor: 1.00

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

	T	1
108-95-2Phenol	10.	U
111-44-4bis(2-Chloroethyl)ether	10.	Ū
95-57-82-Chlorophenol	10.	Ū
541-73-11,3-Dichlorobenzene	10.	Ū
106-46-71,4-Dichlorobenzene	10.	Ŭ
100-51-6Benzyl alcohol	10.	Ü
95-50-11,2-Dichlorobenzene	10.	Ü
95-48-72-Methylphenol	10.	Ü
108-60-1bis(2-Chloroisopropyl)ether	10.	Ιΰ
106-44-54-Methylphenol	10.	ΰ
621-64-7N-Nitroso-di-n-propylamine	10.	บี
67-72-1Hexachloroethane	10.	Ü
98-95-3Nitrobenzene	10.	Ü
78-59-1Isophorone	10.	Ü
88-75-52-Nitrophenol	10.	Ü
105-67-92,4-Dimethylphenol	10.	Ü
65-85-0Benzoic acid	50.	Ü
111-91-1bis(2-Chloroethoxy)methane	10.	_
120-83-22,4-Dichlorophenol		Ü
120-83-22,4-DICHIOFOPRENOI	10.	Ü
120-82-11,2,4-Trichlorobenzene	10.	U
91-20-3Naphthalene 106-47-84-Chloroaniline	10.	U
	10.	U
87-68-3Hexachlorobutadiene	10.	ַט
59-50-74-Chloro-3-methylphenol	10.	U
91-57-62-Methylnaphthalene	10.	ĮŪ
77-47-4Hexachlorocyclopentadiene	10.	ן דו
88-06-22,4,6-Trichlorophenol	10.	U
95-95-42,4,5-Trichlorophenol	50.	U
91-58-72-Chloronaphthalene	10.	ַ ט
88-74-42-Nitroaniline	50.	U
131-11-3Dimethylphthalate	10.	ับ
208-96-8Acenaphthylene	10.	U
606-20-22,6-Dinitrotoluene	10.	U

# SEMIVOL' TLE ORGANICS ANALYSIS DATA SHEET

FPA SAMPLE NO. 56-23

ab Name: PACE Contract:

SAS No.: 0000034 SDG No.: ab Code: PACE Case No.: EPC

latrix: (soil/water) WATER Lab Sample ID: 3751.0

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2768

evel: (low/med) LOW Date Received: 5/21/91

% Moisture: not dec.100. Date Extracted: 5/24/91 dec. 0.

xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91

(Y/N) N CPC Cleanup: pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

99-09-2	3-Nitroaniline	50.	ยนป	7
83-32-9	Acenaphthene	10.	טו	
51-28-5	2,4-Dinitrophenol	50.	U	
100-02-7	4-Nitrophenol	50.	ַט	
132-64-9	Dibenzofuran	10.	ַ ט	1
121-14-2	2,4-Dinitrotoluene	10.	U	
84-66-2	Diethylphthalate	10.	U	
7005-72-3	4-Chlorophenyl-phenylether	10.	U	1776
86-73-7	Fluorene	10.	U _	
	4-Nitroaniline	<del>-50.</del>	<del> v</del> R	1 8
534-52-1	4,6-Dinitro-2-methylphenol	50.	ע `	1.
86-30-6	N-Nitrosodiphenylamine	10.	U	2 .4.
101-55-3	4-Bromophenyl-phenylether	10.	U	1
118-74-1	Hexachlorobenzene	10.	U	
87-86-5	Pentachlorophenol	50.	U	T <sub>e</sub>
85-01-8	Phenanthrene	10.	U	2
120-12-7	Anthracene	10.	U	16
84-74-2	Di-n-butylphthalate	10.	ט	1
206-44-0	Fluoranthene	10.	U	l
129-00-0	Pyrene	10.	ט	
85-68-7	Butylbenzylphthalate	10.	III _	
91-94-1	3.3'-Dichlorobenzidine	<del>-20</del>	To R	
56-55-3	Benzo(a) anthracene	10.	ן ט	
218-01-9	Chrysene	10.	ט	ĺ
117-81-7	bis(2-Ethylhexyl)phthalate	10.	Ū	ĺ
117-84-0	Di-n-octylphthalate	10.	บ	ĺ
205-99-2	Benzo(b) fluoranthene	10.	Ü	į
207-08-9	Benzo(k) fluoranthene	10.	<u>ี</u> บิ	ĺ
50-32-8	Benzo(a)pyrene	10.	Ü	i
193-39-5	Indeno(1,2,3-cd)pyrene	10.	ΰ	l
53-70-3	Dibenzo(a,h)anthracene	10.	Ŭ	
191-24-2	Benzo(g,h,i)perylene	10.	Ŭ	
== = <b>= : =</b>		-5.	-	

FORM I SV-2

1/87 Rev.

# SEMIVOL THE ORGANICS ANALYSIS DATA SHEET That Patively IDENTIFIED COMPOUNDS

(	۳PA	SAMPLE	NO.
1			
1	S6-	-23	1

ab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.: 000003 pdg No.:

Sample wt/vol: 1000. (g/mL) ML Lab File ID: D2768

evel: (low/med) LOW Date Received: 5/21/91

% Moisture: not dec.100. dec. 0. Date Extracted: 5/24/91

\_xtraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/21/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
2				
5				
8				
10. 11. 12.				
15.				
18				
20. 21. 22. 23.				
?5.				
28.				
0				

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FORM I SV-TIC



## DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING

PESTICIDES/PCBS ANALYSES DATA

Samples Collected 05/20/91

Chemical Analyses Performed By
PACE, Incorporated

August 19, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

No target compound list (TCL) compounds were detected in the pesticide/PCB fraction.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- ${\tt U}$  The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable. (Note: Analyte may or may not be present.)
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



# Data Validation for Environmental Project Control, Inc.

Samples Collected May 20, 1991

## Pesticide/PCB Analyses Data

## Case Narrative

Three treatment system samples were collected May 20, 1991 and submitted to Pace, Inc. May 21, 1991. The laboratory was requested to perform pesticide/PCB target compound list (TCL) analyses.

Cooler temperature on receipt at the laboratory was not recorded on the documentation included in the data package. Corrective action is required. Temperatures outside the  $^{4}$ C  $^{2}$ C range may adversely affect the more volatile compounds.

No TCL compounds were detected in the pesticide/PCB fraction.

The samples included in this Sample Delivery Group (SDG) are:

Lab ID	Client ID	Date of Collection
3749	S1-23	05/20/91
3750	S1-23FB	05/20/91
3751	S6-23	05/20/91

The areas reviewed during validation are listed below.



## ORGANIC DATA VALIDATION PROCEDURE

- I. Sample Holding Time
- II. Instrument Performance
- III. Calibration
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field QC Samples
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
    - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment of Data for a Case



#### DATA VALIDATION

## I. Sample Holding Times

All samples were extracted and analyzed within holding times.

## II. Instrument Performance

DDT retention time was greater than or equal to 12 minutes.

Retention time windows were reported on Form IX for each column used.

Retention times and calibration factors were accurately recorded on Form IX.

DDT/Endrin degradation was less than 20%.

DBC retention time met the 1.5% criteria for wide-bore capillary columns on the DB-5 and DB-608 columns.

#### III. Calibration

## Initial Calibration Linearity Check Inst V63400 06/03-05/91

The DB608 column used for quantitation met the 10% relative standard deviation (%RSD) criteria. The DB5 column used for confirmation failed to meet the %RSD criteria for the following compounds:

aldrin (19%) endrin (26%) 4,4'-DDT (15%)

These compound were not detected and no data have been qualified.

## <u>Initial Calibration Linearity Check Inst V63400 06/10-11/91</u>

The DB608 column used for quantitation met the 10% relative standard deviation (%RSD) criteria. The DB5 column used for confirmation failed to meet the %RSD criteria for the following compounds:

aldrin (26%) endrin (28%) 4,4'-DDT (31%) DBC (21%)



These compound were not detected and no data have been qualified.

## Analytical Run Sequence

All standards were run within 72 hours.

## Continuing Calibration

The column used for quantitation met the 15% D criteria.

The column used for confirmation met the 20% D criteria.

#### IV. Blanks

No TCL compounds were detected in BLKW22.

## V. Surrogate Recovery

Surrogate recoveries were acceptable.

## VI. Matrix Spike/Matrix Spike Duplicate

Matrix spike recoveries for the following compounds were outside the established advisory limits:

gamma-BHC (13%)
endrin (8%)

Matrix spike duplicate recoveries for the following compounds were outside established advisory limits:

gamma-BHC (4%) heptachlor (0%) dieldrin (0%) endrin (0%) 4,4'DDT (19%)

These compounds were not detected in the unspiked sample but the non detects for heptachlor, dieldrin, and endrin have been rejected.

Gamma-BHC, heptachlor, aldrin, dieldrin, endrin and 4,4'-DDT failed to meet RPD criteria. These compounds were not detected in the unspiked sample. The non-detects for heptachlor, dieldrin, and endrin were previously rejected. No other data have been qualified.



## VII. Field Quality Control Samples

S1-23FB is a field blank. No TCL compounds were detected.

## VIII. Internal Standards Performance

Standard performance based on the retention time windows was acceptable.

## IX. TCL Compound Identification

No target compounds were detected.

## X. Compound Quantitation and Reported Detection Limits

Detection limit quantitations were acceptable with regard to supporting data.

## XI. Tentatively Identified Compounds

Not Applicable.

## XII. System Performance

System performance was acceptable.

## XIII. Overall Assessment of Data for a Case

No TCL compounds were detected.

# 1D PEST: IDE ORGANICS ANALYSIS DATA SHEET

S1-23

Lab Name: PACE Contract: EPC

00020

Lab Code: PACE Case No.: SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3749.8

3ample wt/vol: 1000. (g/mL)ML Lab File ID: V66625

Level: (low/med) LOW Date Received: 5/21/91

Moisture: not dec.100. dec. 0. Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 6/ 5/91

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

	1 .	<del></del>
319-84-6Alpha-BHC	.050	ט
319-85-7Beta-BHC	.050	Ū
319-86-8Delta-BHC	.050	U
58-89-9Gamma-BHC	.050	Ū
76-44-8Heptachlor	.050	12
309-00-2Aldrin	.050	Ū
1024-57-3Heptachlor Epoxide	.050	Ū
959-98-8Endosulfan I	.050	Ū
60-57-1Dieldrin	سه الم	UR
72-55-94,4'-DDE	.10	<b>ט</b> '
72-20-8Endrin	,20	OR
33213-65-9Endosulfan II	.10	Ū T
72-54-84,4'-DDD	.10	U
1031-07-8Endosulfan Sulfate	.10	U
50-29-34,4'-DDT	.10	U
72-43-5Methoxychlor	.50	U
53494-70-5Endrin Ketone	.10	Ū
5103-71-9alpha-Chlordane	.50	Ū
5103-74-2gamma-Chlordane	.50	บั
8001-35-2Toxaphene	1.0	Ū
12674-11-2Arochlor-1016	.50	Ü
11104-28-2Arochlor-1221	.50	Ū
11141-16-5Arochlor-1232	.50	Ü
53469-21-9Arochlor-1242	.50	Ü
12672-29-6Arochlor-1248	.50	บ
11097-69-1Arochlor-1254	1.0	ũ
11096-82-5Arochlor-1260	1.0	บั

A SAMPLE NO.

ab Name: PACE

Contract: EPC

S1-23FB

Tab Code: PACE Case No.:

SAS No.:

SDG No.:

matrix: (soil/water) WATER

Lab Sample ID: 3750.1

ample wt/vol:

1000. (g/mL)ML

Lab File ID: V66665

Level: (low/med) LOW

Date Received: 5/21/91

Moisture: not dec.100. dec. 0.

Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/10/91

PC Cleanup: (Y/N) N

pH: 7.0

Dilution Factor:

1.00

CAS NO. COMPOUND

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Q

.050 .050 .050	บ บ บ
.050	U
.050	ם ח
.10	U U
,10	n n
.10	U
.10	U U
.10	บ บ
.50	บ บ
1.0 .50	U U
.50 .50	ט ט
.50 .50	บ บ
1.0	U U
	.050 .050 .050 .050 .050 .050 .10 .10 .10 .10 .10 .50 .50 .50 .50 .50

## PESTILIDE ORGANICS ANALYSIS DATA SHEET

~ `A SAMPLE NO.

S6-23

ab Name: PACE Contract: EPC

SAS No.:

Lab Sample ID: 3751.0

Matrix: (soil/water) WATER

Lab File ID: V66666

ample wt/vol:

1000. (g/mL)ML

Level: (low/med) LOW

Date Received: 5/21/91

SDG No.:

Moisture: not dec.100.

Date Extracted: 5/22/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 6/10/91

PC Cleanup: (Y/N) N pH: 7.0

ab Code: PACE Case No.:

dec. 0.

Dilution Factor:

1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L



DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/21/91

Chemical Analyses Performed By PACE, Incorporated

August 16, 1991

By:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



#### EXECUTIVE SUMMARY

Tetrachloroethene was the only compound detected above the detection limits in the samples. No tentatively identified compounds (TICs) were detected.

As noted on the chain of custody, samples were  $12^{\circ}$  C when received in the laboratory. Temperatures outside the  $4^{\circ}$ C  $\pm 2^{\circ}$ C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency Functional Guidelines for Evaluating Organics Analyses, February 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



## Case Narrative

Six treatment system samples were collected and submitted for analysis to PACE, Inc. on May 21, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses. No field duplicate, matrix or matrix spike duplicate were analyzed.

The samples included in this Sample Delivery Group (SDG) are:

Date of Collection
05/21/91
05/21/91
05/21/91
05/21/91



## **Volatiles**

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
  - IV. Blanks
  - V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

All samples were analyzed within the 14-day holding time for preserved samples.

## II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

## III. Calibration

Areas were manually integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed as no hardcopy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No positive data were affected.

#### A. Initial

Initial calibration criteria were met.

## B. Continuing

Continuing calibration criteria not met are summarized below.

Date	Time	Compound	%D	
6/2	10:23	2-Butanone	36.0	(25)
		4-Methyl-2-pentanone	33.1	(25)
		2-Hexanone	30.1	(25)
		1,1,2,2-Tetrachloroethane	32.9	(25)

## () Acceptance criteria

The data were not affected.

## IV. Blanks

All blanks were acceptable with the exception of VBLK01 which had acetone detected at 2 ppb. Acetone results were qualified as less than the reported values (U).



### V. Surrogate Recovery

All surrogate recoveries were within acceptance criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

No matrix spike/matrix spike duplicate analysis was performed. Since the surrogate recoveries and the internal standard area counts were acceptable, the data can be used with caution.

## VII. Field Duplicates

Field duplicate samples were not collected. Since the surrogate recoveries and the internal standard area counts were acceptable, the data can be used with caution.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

Target compounds were properly identified.

## X. Compound Quantitation and Reported Detection Limits

Concentrations could not be duplicated by manual calculation using the appropriate continuing calibration standard. (Manually calculated results were approximately 3% higher than those provide on the instrument printout.) Because of the dilution factors required for analysis, the data were not affected by the differences in calculated results.

## XI. Tentatively Identified Compounds

No TICs were detected.

## XII. System Performance

System performance was acceptable.



## XIII. Overall Assessment of Data for a Case

## VOI TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NU.

T1-0:0=021

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3791.9

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2778

Level: (low/med) LOW Date Received: 5/22/91

% Moisture: not dec. 100. Date Analyzed: 5/30/91

Column: (pact/cap) PACK Dilution Factor: 20.00

CAS NO.	COMPOUND	CONCENTR (ug/L or			Q	
						-;
1 /4-87-3	Chloromethane _		!	200.	!U	:
74-83-9	Bromomethane		!	200.	; U	;
/5-01-4	Vinyl Chloride_		!	200.	!U	i
1 /5-00-3	Chloroethane		!	200.	ŧυ	;
75-09-2	Methylene Chlor:	rqe	<u>:</u>	100.	:U	;
67-64-1	Acetone		<u>'</u>	200.	: U	}
, \alpha_1a_0====	carbon Disultion		'	100.	١U	i
75-35-4	1,1-Dichloroethe	ene	!	100.	; U	•
75-34-3	1,1-Dichloroetha	vue		100.	¦ U	1
: 540-59-0	1,2-Dichloroethe	ene (total.	) <u> </u>	100.	; U	;
1 67-66-3	Chloroform		!	100.	: U	1
107-06-2	1.2-Dichloroetha	ne		100.	:U	;
; 78-93-3	2-Butanone		!	200.	: U	;
: 71-55 <i>-</i> 6	·1,1,1-Trichloroe	thane	;	100.	١U	1
: 56-23-5	Carbon Tetrachlo	ride	;	100.	١IJ	1
108-05-4	Vinyl Acetate		;	200.	١U	;
1 75-27-4	Bromodichloromet	hane	i	100.	¦U	!
: 78-87-5	1,2-Dichloroprop	ane	;	100.	١U	}
:10061-01-5	cis-1,3-Dichlord	propene	!	100.	¦U	:
79-01-6	Trichloroethene		!	43.	; J	;
124-48-1	~Dibromochloromet	hane	1	100.	¦U	;
79-00-5	1,1,2-Trichloroe	thane		100.	:U	1
71-43-2	Benzene			100.	:U	1
	Trans-1.3-Dichlo			100.	:U	1
	Bromoform		1	100.	:U	!
108-10-1	4-Methyl-2-Penta	none	:	200.	ŀU	;
591-78-6	2-Hexanone		:	200.	١U	1 are
127-18-4	Tetrachloroethen	e	;	1800.	1)8(	6127191
79-34-5	1,1,2,2-Tetrachl	oroethane	;	100.	¦υ`	; 60
108-88-3	Toluene		:	100.	ŀU	;
108-90-7	Chlorobenzene		;	100.	¦U	:
100-41-4	Ethylbenzene		;	100.	!U	;
100-42-5	Styrene		!	100.	ŀÜ	!
1330-20-7	Xylene (total)		:	100.	!U	;
			;		1	<b>!</b>

### ANTWLITTE AUGMISTON WISHELDED BUILD PITTER TTYTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

SDG No.:

Matrix: (Soil/water) WATER

Lab Sample ID: 3791.9

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2778

evel: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Dilution Factor: 20.00

\_olumn: (pack/cao) PACK

Number TICs found:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	   RT	: : EST. CONC.	: Q :
1.				1
2				!:
3				!;
1 4				!!
5				!!
5				::
				¦
				<u>'</u>
10				' '
11.				
12.				
. 13				
14		!		:
15:		!		
16		!		
				!
18				
20				;
21		i		
22				
72	·			
1 24		;	!	;
25:			!	!
. 26		!		:
1 271		!		!
28			!	
1 20		!	!	!
30		:		!
		'		i

## VOI TILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TE 010 2 8

Lab Name: PACE Contract:

Matrix: (soil/water) WATER Lab Sample ID: 3800.1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2779

Level: (low/med) LOW Date Received: 5/22/91

% Moisture: not dec. 100. Date Analyzed: 5/30/91

Column: (back/cap) PACK Dilution Factor: 20.00

	CAS NO.	COMPOUND	CONCEN'				α	
;	74 07 0	Ch1			!	200	:	:
i	74-87-3	Chloromethane				200.	: U	
i	74-83-9	Bromomethane			, <u>i</u>	200.	U	i
•	75-01-4	Vinyl Chloride			. <b>i</b>	200.	!U	i
,	75-09-2	Chloroethane Methylene Chlori			. ¦	200.	: U	i
•	67-64-1	Acatona	oe		. '	100. 200.	. U	i
;	75-15-0	Acetone Carbon Disulfide			. !	100.	; U	1
!	75-25-4	1.1-Dichloroethe			:	100.	10	1
!	75-34-3	1.1-Dichloroetha	ne		;	100.	: U	:
į	540-59-0	1,2-Dichloroethe	ne (tota	77	!	100.	: U	;
:	67-66-3	Chloroform	116 , 0000	`` '	•	100.	10	;
:	107-06-2	1,2-Dichloroetha			!	100.		•
:	78-93-3	2-Butanone	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		:	200.	·=	•
i	71 -55 -6	1,1,1-Trichloroe	thane		:	100.	· <del>-</del>	•
:		Carbon Tetrachlo				100.		:
:		Vinyl Acetate				200.	10	
;	75-27-4	Bromodichlorometh	nane		:	100.	:0	
	78 -87 -5	1,2-Dichloropropa	308			100.	ΙÜ	•
:	10061-01-5	c1s-1,3-D1chlorop	oropene			100.		:
ì	79-01-6	Trichloroethene	- · · · · · · · · · · · · · · · · · · ·		1	51.	J	•
:	124-48-1	Dibromochlorometh	ane			100.	10	
:	79-00-5	1,1,2-Trichlowcet	thane			100.	; U	
:	71-43-2	Benzene			;	100.	i U	i
;		Trans-1.3-Dichlor	ropropen		<u> </u>	100.	10	
;	75-25-2					100.	įυ.	
;		4-Methyl-2-Pentar	one			200.	lu	}
:	591-78-6	2-Hexanone			:	200.	:U	1
:	127-18-4	Tetrachloroethene			;	1800.	1/8	Je
:	79-34-5	1,1,2.2-Tetrachlo	roethan	e :		100.	i u	6127141
1	108-88-3	Toluene			1	100.	١Ū	
1	108-90-7	Chlorobenzene			}	100.	l U	;
}	100-41-4	Ethylbenzene			}	100.	Ü	1
	100-42-5	Styrene				100.	i U	;
	1330-20-7	Xylene (total)		;	!	100.	_	;
_	<b></b>	, ·		;			_!	_ :
				_		<b>_</b> _		_

## T'TATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE

Contract:

TO-INF ----0-00-2-9

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3800.1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2779

evel: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

palumn: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
;======================================	=======================================	; =======	;===========	;====;
! 1!		<sup>!</sup>		!;
2		!		!:
. 3!		!	•	::
1 41		!	!	<b>!</b> ;
5		!	!	! !
6		¦	!	!
7				:
8.				
				;
, ,,,	i		<b></b>	·;
	i		' '	;
10	i			;
	i			:
			i	
. 15				!
1/				
18;				;
19				
20				;
21			!	:
22	!			;
. 77		:		;
2.1			;	:
25.				!
26.		:		
' 7 <b>7</b>		;		
70		;	;	;
		;	'	:
20		!		!
30	i	!	!	i
		!		;

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## VOL TILE ORGANICS ANALYSIS DATA SHEET

EFM OMITTLE NU.

T3-INF

Lab Name: PACE Contract:

1\_\_\_\_00035

Matrix: (soil/water) WATER Lab Sample ID: 3805.2

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2780

cevel: (low/med) LOW Date Received: 5/22/91

% Moisture: not dec. 100. Date Analyzed: 5/30/91

Column: (pack/cap) PACK Dilution Factor: 20.00

		CONCENTRATION UNITS:				
CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/L	Q	
!			<u>-</u>		<del></del> -	;
: 74-87-3	Chloromethane _		:	200.	:ប	;
1 74-83-9	Bromomethane		!	200.	; U	1
1 75-01-4	Vinyl Chloride_		;	200.	:U	1
1 75-00-3	Chloroethane		:	200.	١U	;
1 75-09-2	Methylene Chlor	ıde	;	100.	:u	;
1 67-64-1	Acetone		;	200.	١U	;
1 75-15-0	Carbon Disulfid	e	;	100.	۱U	:
: 75-35-4	1,1-Dichloroeth	ene	!	100.	١U	;
: 75-34-3	1,1-Dichloroeth	ane	!	100.	١U	1
1 540-59-0	1,2-Dichloroeth	ene (total)	!	100.	١U	!
: 67-66-3	Chloroform		:	100.	:U	¦
107-06-2	1,2-Dichloroeth	ane	;	100.	¦ U	;
1 78-93-3	2-Butanone		:	200.	١U	;
1 71-55-6	1,1,1-Trichloro	ethane	1	100.	; U	;
: 56-23-5	Carbon Tetrachle	oride	:	100.	!U	:
108-05-4	Vinyl Acetate _		;	200.	: U	:
1 75-27-4	Bromodichlorome	thane	;	100.	١U	1
1 78-87-5	1,2-Dichlaropro	pane	;	100.	10	1
110061-01-5	cis-1,3-Dichlore	opropene	!	100.	:U	.1
: 79-01-6	Trichloroethene		;	47.	; ]	;
124-48-1	Dibromochlorome	thane	;	100.	١U	;
1 79-00-5	1,1,2-Trichloro	ethane	;	100.	۱U	:
1 71-43-2	Benzene		:	100.	: U	1
110061-02-6	Trans-1,3-Dichlo	propropene	;	100.	:U	;
1 75-25-2	Bromoform		:	100.	÷υ	:
1 108-10-1	4-Methyl-2-Penta	anone		200.	ïυ	i
: 591-78-6	2-Hexanone		;	200.	:U	}
127-18-4	Tetrachloroether	16	;	1900.	DR.	6127191
1 79-34-5	1,1,2,2-Tetrachl	loroethane	;	100.	:u`	1 615
108-88-3	Toluene		:	100.	:U	1
108-90-7	Chlorobenzene		:	100.	: U	1
100-41-4	Ethylbenzene		;	100.	:U	;
100-42-5	Styrene		!	100.	:U	;
1330-20-7	Xylene (total)_		;	100.	ŀU	;
<b>!</b>	,		;		1	<b>!</b>
						-

## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Con	intract:
--------------------	----------

00036 SDG No.:

T3-INF

"atrix: (soil/water) WATER Lab Sample ID: 3805.2

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2780

evel: (low/med) LOW Date Received: 5/22/91

% Moisture: not dec. 100. Date Analyzed: 5/30/91

\_olumn: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	: : RT	EST. CONC.	; a ;
1.				
				!!
3				!!
· · · · · · · · · · · · · · · · · · ·				::
5				;;
				'
8				;
9				
10				
11				¦;
13.				<b></b>
; 14;		;		;
15		!		!
· 16				
		'		'
19				
: 20:				;
' 21!		!		!
22    23.			i	
, 54		;		:
25			i	i
261				:
27	<u> </u>	!	[	
70		;	i	
			;	:

## VOL TILE ORGANICS ANALYSIS DATA SHEET

T4-INF .ab Name: PACE Contract:

SDG No 0 0 0 4 2 

Lab Sample ID: 3810.9 latrix: (soil/water) WATER

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2838

Level: (low/med) LOW Date Received: 5/22/91

: Moisture: not dec. 100. Date Analyzed: 6/ 2/91

Column: (pack/cap) PACK Dilution Factor: 20.00

## CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Q

C	CAS NO.	COMPOUND	(ug/L or	ug/Kg)		(	Q
!				<u>-</u>			
;	74-87-	3Chloromethane		!	200.	;U	
:	74-83-	9Bromomethane		- <b>-</b> !	200.	١U	;
;	75-01-	4Vinyl Chloride		!	200.	i U	;
	75-00-	3Chloroethane		!	200.	; U	;
;	75-09-	2Methylene Chlorid			100.	;U	
	6/-64-	1Acetone		!	250.	: 1	•
	75-15-	OCarbon Disulfide_		!	100.	ΙU	}
;	75-35-	41,1-Dichloroethen	3	!	100.	¦U	
:		31,1-Dichloroethane			100.	١U	
•	540-59-	01,2-Dichloroethene	e (total)	) —— <u> </u>	100.	١U	
	67-66-	3Chloroform		!	100.	¦ U	;
:	107-06-	21,2-Dichloroethane			100.	;U	
1	78-93-	32-Butanone		!	200.	ŀυ	;
:	71 -55 -	61,1,1-Trichloroeth	nane	;	100.	١U	;
;	56-23-	5Carbon Tetrachlors	lde	<sup>;</sup>	100.	;U	1
;	108-05-	4Vinyl Acetate		;	200.	: U	;
;	75-27-	4Bromodichlorometh	ane	!	100.	: U	i
;	78 -87 -	51,2-Dichloropropar	ne	!	100.	٠U	;
110	061-01-	5cis-1,3-Dichloropr	opene	!	100.	ťÜ	;
:	79-01-	6Trichloroethene		1	100.	: U	;
:	124-48-	1Dibromochlorometha	ne	_	100.	:U	:
:	79-00-	51,1,2-Trichloroeth	ane	;	100.	:U	:
;	71-43-	2Benzene		;	100.	١U	;
110	061-02-0	6Trans-1,3-Dichlord	propene	_ :	100.	١U	;
1	75-25	2Bromoform		<b>:</b>	100.	ΙU	i
;	108-10-	14-Methy1-2-Pentanc	ne	;	200.	; U	į
: :	591-78-6	52-Hexanone		!	200.	١U	;
1	127-18-4	4Tetrachloroethene		;	1400.	1	:
;	79-34-5	51,1,2,2-Tetrachlor	oethane	:	100.	ŧυ	1
	108-88-3	3Toluene			100.	:υ	
:	108-90-7	7Chlorobenzene		;	100.	Ι υ	i
	100-41-4	Ethylbenzene		<u>;</u>	100.	i U	
	100-42-5	5Styrene		<u>;</u>	100.	ıu	•
1 1	330 - 20 - 3	7Xylene (total)		<u>;</u>	100.	:U	:
!	JC	Ayrene ( vo dat/		<u>;</u>	a terter e	!	•
				'		- '	'

## T"NTATIVELY IDENTIFIED COMPOUNDS

Lab Name: PACE Contract:

ab Code: PACE Case No.: EPC SAS No.: SDG No.:

Lab Sample ID: 3810 0 0 4 3 Matrix: (soil/water) WATER

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2838

evel: (low/med) LOW Date Received: 5/22/91

% Moisture: not dec. 100. Date Analyzed: 6/ 2/91

olumn: (pack/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:

T4-INF

Number TICs found: 0 (ug/L or ug/Kg) UG/L

				<del></del> :
CAS NUMBER	COMPOUND NAME	: RT	EST. CONC.	; Q ;
;======================================	=======================================		. ===========	!====:
1			! <b></b>	!!
2			!	[]
				!!
		i .		!!
				!!
·				!!
				!!
8				!:
	i			!!
11	i			<u> </u>
10				<b>!</b>
				\
				<u>'</u> ;
16.				
1 17-		'		' <u>'</u>
18.				
10 /		,		
' 20				
1 21				
20				
25.	•			
5d )		:	:	
27			;	
				;
30 1		:		:
!		:		

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## DATA VALIDATION REPORT

FOR

ENVIRONMENTAL PROJECT CONTROL, INC.

WELLS G&H PROJECT
TREATMENT SYSTEM SAMPLING
VOLATILES ANALYSES DATA

Samples Collected 5/21/91

Chemical Analyses Performed By
PACE, Incorporated

August 20, 1991

ву:

Trillium, Inc.
7A Grace's Drive
Coatesville, PA 19320
(215) 383-7233



## EXECUTIVE SUMMARY

Data quality for this sample delivery group was very good.

Cooler temperature upon receipt of samples by the laboratory was 12 $^{\circ}$ C. Cooler temperatures outside the 4 $^{\circ}$ C  $\pm 2$  $^{\circ}$ C range may adversely affect the volatile compounds.

Validation of organic data is conducted in conformance with Environmental Protection Agency (EPA) Functional Guidelines for Evaluating Organics Analyses, February 1, 1988, with modifications by EPA Region I, November 1, 1988.

Based on the supporting documentation, qualifier codes may be added, deleted, or modified by the data validator. Final results are either qualified or unqualified. Unqualified (valid) results mean that the reported values may be used without reservations. Validator qualified results are annotated with the following codes in accordance with the Functional Guidelines:

- U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J The associated value is an estimated quantity.
- R The data are unusable (Note: analyte may or may not be present).
- UJ The material was analyzed for, but was not detected. The associated value, which is either the sample quantitation limit or the sample detection limit, is an estimate and may be inaccurate or imprecise.

These codes are used on the accompanying data summary sheets to qualify some of the results.



#### Case Narrative

Eight samples (including matrix spike and matrix spike duplicate) were collected and submitted to PACE, Inc. on May 21, 1991. The laboratory was requested to perform volatile organics (VOA) target compound list (TCL) analyses.

The samples included in this Sample Delivery Group (SDG) are:

Client ID	<u>Lab ID</u>	Date of Collection
S1-24	. 3779	05/21/91
S1-24DUP	3780	05/21/91
S1-24TB	3781	05/21/91
S2-22	3784	05/21/91
S3-22	3785	05/21/91
S4-22	3786	05/21/91



#### Volatiles

The requirements to be checked in validation are listed below.

- I. Holding Times
- II. GC/MS Tuning
- III. Calibration
  - A. Initial
  - B. Continuing
- IV. Blanks
- V. Surrogate Recovery
- VI. Matrix Spike/Matrix Spike Duplicate
- VII. Field Duplicates
- VIII. Internal Standards Performance
  - IX. TCL Compound Identification
  - X. Compound Quantitation and Reported Detection Limits
  - XI. Tentatively Identified Compounds
  - XII. System Performance
- XIII. Overall Assessment



## I. Holding Times

All samples were received preserved and analyzed within the 14-day holding time for preserved samples.

### II. GC/MS Tuning

GC/MS tuning and mass calibrations were within criteria.

#### III. Calibration

Manual areas were integrated for one or more compounds in each of the standards in this data package. No evaluation of these manual integrations can be performed, as no hard copy documentation is provided. The validation has been completed on the assumption that the manual integrations done and reported by the laboratory were valid and correct. No data apear to be affected.

#### A. Initial

Initial calibration criteria were met on 5/28/91.

## B. Continuing

Continuing calibration criteria were met on 5/29/91 (12:42).

Continuing calibration criteria were met on 5/29/91 (23:20) with the exception of the % difference for 4-methyl-2-pentanone (actual 25.6; criteria 25) and 2-hexanone (actual 25.8; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/30/91 (10:23) with the exception of the % difference for 2-butanone (actual 28.3; criteria 25), 4-methyl-2-pentanone (actual 35.5; criteria 25), 2-hexanone (actual 35.7; criteria 25), and 1,1,2,2-tetrachloroethane (actual 27.1; criteria 25). Data were not affected.

Continuing calibration criteria were met on 5/30/91 (23:11).

Continuing calibration criteria were met on 5/31/91.

#### IV. Blanks

Acetone was reported in Method Blanks VBLK01, VBLK02, and S1-24TB. Methylene chloride was reported in Method Blank VBLK01. The result for acetone in Sample S1-24TB was qualified as less than the reported value.



## V. Surrogate Recovery

Surrogate recoveries were within acceptance criteria.

## VI. Matrix Spike/Matrix Spike Duplicate

The matrix spike (MS) and matrix spike duplicate (MSD) were performed on Sample S1-24. The percent recoveries for 1,1-dichloroethene in the MS and the MSD were below QC criteria. No positive results for 1,1-dichloroethene were reported in field samples; data were not affected.

## VII. Field Duplicates

Compounds and concentrations (in ug/L) reported in Samples S1-24 and S1-24DUP were as follows:

Compound	<u> 51-24</u>	<u>S1-24DUP</u>
Trichloroethene	80	74
Tetrachloroethene	3400	3200

Results were within QC criteria.

## VIII. Internal Standards Performance

Internal standards areas and retention times were acceptable.

## IX. TCL Compound Identification

TCL compound identifications were acceptable.

## X. Compound Quantitation and Reported Detection Limits

The tetrachloroethene result in Sample S2-22 was slightly beyond the calibration range of the instrument. This result met precision and accuracy criteria and was acceptable as reported.

The concentrations reported on the quant report for Sample S3-22 were apparently calculated using the wrong calibration standard. Results reported on the Form I are correct.

All other results and detection limits were acceptable with regard to the supporting data.



## XI. Tentatively Identified Compounds

No TICs were reported for this SDG.

## XII. System Performance

System performance requires attention. Manual integrations should be addressed. Quantified results should be verified for accuracy.

## XIII. Overall Assessment of Data for a Case

Data quality for this sample delivery group was very good.

## 1 A VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract: 00026

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3779.0

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2765

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/29/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNIT	5:
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0.40 110	COMPOUND	CUNCENTRA				
CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/L	C	.]
;			·			;
1 74-87-3-	Chloromethane _		:	200.	١U	;
1 74-83-9-	Bromomethane		;	200.	٠u	;
1 75-01-4	Vinyl Chloride		:	200.	١U	1
1 75-00-3	Chloroethane		;	200.	٠u	:
1 75-09-2	Methylene Chlor	ıde	:	100.	: U	;
67-64-1	Acetone		;	200.	: U	;
1 75-15-0	Carbon Disulfide	₽	;	100.	ΙU	;
1 75-35-4	1,1-Dichloroethe	ene	;	100.	ŧυ	;
1 75-34-3	1,1-Dichloroetha	ane	;	100.	١U	:
1 540-59-0	1.2-Dichloroethe	ene (total)	:	100.	١U	;
1 67-66-3	Chloroform		;	100.	!U	;
107-06-2	1.2-Dichloroetha	ane	;	100.	:U	:
1 78-93-3	2-Butanone		;	200.	١U	i )
71-55-6	1,1,1-Trichloroe	thane	;	100.	: U	}
1 56-23-5	Carbon Tetrachlo	oride	;	100.	: U	:
108-05-4	Vinyl Acetate		;	200.	ŀυ	;
1 75-27-4	Bromodichloromet	hane	1	100.	١U	P
1 78-87-5	1,2-Dichloroprop	ane	!	100.	; 🗆	;
110061-01-5	cis-1.3-Dichloro	propene	;	100.	١U	;
1 79-01-6	Trichloroethene		;	80.	¦ J	:
124-48-1	Dibromochloromet	hane	:	100.	; U	;
1 79-00-5	1,1,2-Trichloroe	thane	;	100.	١U	;
71-43-2	Benzene		;	100.	!U	;
10061-02-6	Benzene Trans-1,3-Dichlo	ropropene	:	100.	ŀU	1
: 75-25-2	Bromoform		. 1	100.	ιU	1
108-10-1	4-Methyl-2-Penta	none	;	200.	١U	;
591-78-6	2-Hexanone		_	200.	ΙU	;
127-18-4	Tetrachloroethen	e	<b>:</b>	3400.	;	;
79-34-5	1,1,2,2-Tetrachl	oroethane	;	100.	١U	;
108-88-3	Toluene			100.	: U	;
108-90-7	Chlorobenzene		1	100.	: U	1
100-41-4	Ethylbenzene		;	100.	: U	;
100-42-5	Styrene		;	100.	١U	;
1330-20-7	Xylene (total)		<del></del>	100.	١U	;
			!		!	:

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

S1 -24 Lab Name: PACE Contract:

0 U O ŞDØ No.: 

Lab Sample ID: 3779.0 Matrix: (soil/water) WATER

Lab File ID: J2765 Sample wt/vol: 5.0 (g/mL) ML

Level: (low/med) LOW Date Received: 5/22/91

% Moisture: not dec. 100. Date Analyzed: 5/29/91

Column: (pach/cap) PACK Dilution Factor: 20.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

			·		<del></del> :
;	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	. α :
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	5				<b>¦</b> ;
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## 1 A VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE Contract:

SDG No.:

Matrix: (Soil/water) WATER

Lab Sample ID: 3780.3

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2805

Level: (low/med) LOW

Date Received: 5/22/91

! Moisture: not dec. 100.

Date Analyzed: 5/31/91

Column: (pack/cap) PACK

Dilution Factor: 20.00

CONCENTRATION UNITS:

646 NG	COMPOUND	LUNCENTRA				_
CAS NO.	COMPOUND	(ug/L or	ná\kā)	UG/L		Q
			·		;	;
1 74-87-3	Chloromethane _		:	200.	۱u	;
1 74-83-9	Bromomethane			200.	١U	;
1 75-01-4	Vinyl Chloride		;	200.	ŀU	;
1 75-00-3	Chloroethane		;	200.	٠u	;
1 75-09-2	Methylene Chlor	.de	;	100.	:U	:
67-64-1	Acetone		:	200.	١U	;
; 75-15-0	Carbon Disulfide	₽	;	100.	٠U	:
: 75-35-4	1.1-Dichloroethe	ene	:	100.	ΙU	;
1 75-34-3	1,1-Dichloroetha	ane	:	100.	١U	:
1 540-59-0	1.2-Dichloroethe	ene (total)	:	100.	١U	;
1 67-66-3	Chloroform			100.	ŀU	!
107-06-2	1,2-Dichloroetha	ne	;	100.	١U	;
1 78-93-3	2-Butanone		;	200.	; U	!
: 71-55-6	1,1,1-Trichloroe	thane	;	100.	: U	:
1 56-23-5	Carbon Tetrachlo	ride	1	100.	١U	!
108-05-4	Vinyl Acetate		:	200.	ΙU	;
1 75-27-4	Bromodichloromet	hane	:	100.	ΙU	:
1 78-87-5	1,2-Dichloroprop	ane	1	100.	; U	;
110061-01-5	cis-1,3-Dichlore	propene	;	100.	ļυ	;
79-01-6	Trichloroethene		;	74.	; J	;
124-48-1	Dibromochloromet	hane	;	100.	١U	;
1 79-00-5	1,1,2-Trichloroe	thane	;	100.	١U	;
1 71-43-2				100.	١U	;
110061-02-6	Trans-1,3-Dichlo	ropropene	<u> </u>	100.	: U	;
1 75-25-2				100.	١U	;
108-10-1	4-Methyl-2-Penta	none	;	200.	١U	:
: 591-78-6	2-Hexanone			200.	ŀυ	;
1 127-18-4	Tetrachloroethen	e	;	3200.	;	;
1 79-34-5	1,1,2,2-Tetrachl	oroethane	;	100.	:U	;
108-88-3	Toluene		_:	100.	١U	;
108-90-7	Chlorobenzene		_ !	100.	:U	;
1 100-41-4	Ethylbenzene		_ :	100.	; U	;
100-42-5	Styrene		_	100.	١U	:
1330-20-7	Xylene (total)		_ ;	100.	ŀU	;
;	, <u> </u>				:	;

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

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Lab Name: PACE Contract:

0 0 GBDG4 No.: 

Lab Sample ID: 3780.3 1atrix: (soil/water) WATER

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2805

evel: (low/med) LOW Date Received: 5/22/91

% Moisture: not dec. 100. Date Analyzed: 5/31/91

Dilution Factor: 20.00 Column: (pack/cap) PACK

CONCENTRATION UNITS:

Number TICs found: (ug/L or ug/Kg) UG/L

,		;		;
CAS NUMBER	COMPOUND NAME	: RT	EST. CONC.	; Q
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20		!		;
22.			'	;
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25!	:			;
26!			!	
		!	!	!
20				!
		1		
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'		'	'	'

## 1 A VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: PACE

Contract:

Lab Code: PACE Case No.: EPC SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3781.1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2786

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pach/cap) PACK

Dilution Factor: 1.00

	CAS NO.	COMPOUND			nā/kā)		(	D
-	74-87-3	-Chloromethane			1	10.	; ; U	i
•	74-87-8	-Bromomethane			;	10.	. –	•
	75-01-4	-Vinyl Chloride			;	10.		,
į	75-00-3	-Chloroethane				10.	. –	;
•	75-09-2	-Methylene Chlorid	~		'	5.	:0	;
:		-Acetone				14.	· -,	,
•	75-15-0	-Carbon Disulfide_			;	5.	; U	;
:	75-35-4	-1,1-Dichloroethen			'	5.	: U	;
:	75-34-3	-1,1-Dichloroethan	~ p		;	5.	; U	;
	540-59-0	-1,2-Dichloroethen	e (tota	377	<u>'</u>	5.	10	•
Ì		-Chloroform				5.	: U	!
	107-06-2	-1,2-Dichloroethan			;	5. 5.	; U	•
	78-93-3	-2-Butanone			;	10.	. U	:
;	71 -55 -6	-1,1,1-Trichloroet	hane		;	5.	; U	i
;	56-23-5	Carbon Tetrachlor	ide		' !	5.	10	:
;	108-05-4	-Vinyl Acetate			;	10.	ΙU	i
;	75-27-4	Bromodichlorometh	ane		:	5.	١Ü	:
1	78 <i>-</i> 87 <i>-</i> 5 <i></i>	-1,2-Dichloropropa	ne		;	5.	Ι υ	į
; 1	.0061-01-5	cis-1.3-Dichloropy	ropene		ŀ	5.	10	
;	79-01-6	Trichloroethene _	,	~	:	5.	ΙÜ	ì
;	124-48-1	Dibromochlorometha	ane		;	5.	ŧŪ	
;	79-00-5	1,1,2-Trichloroeth	ane		;	5.	ΙÜ	
;	71-43-2	Benzene			;	5.	١U	
1 1	0061-02-6	Trans-1,3-Dichlor	propen	6	;	5.	ŀU	!
;	75-25-2	Bromoform		_	- <b>-</b>	5.	:U	1
ł	108-10-1	4-Methvl-2-Pentano	ine		}	10.	١Ú	i
1	591-78-6	2-Hexanone			1	10.		1
;	127-18-4	Tetrachloroethene			;	5.	ΙU	1
1	79-34-5	1,1.2,2-Tetrachlor	cethan	6	;	5.	ŀυ	;
;	108-88-3	Toluene		_	_ ;	5.	۱Ū	;
;	108-90-7	Chlorobenzene			:	5.	: U	;
;	100-41-4	Ethylbenzene			;	5.	:υ	;
!	100-42-5	Styrene			_	5.	;U	;
1	1330-20-7	Xylene (total)			_ ;	5.	:U	1
1								

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Contract: Lab Name: PACE

SDG No.: 000:1 

1atrix: (soil/water) WATER Lab Sample ID: 3781.1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2786

Date Received: 5/22/91 .evel: (low/med) LOW

Date Analyzed: 5/30/91 % Moisture: not dec. 100.

Dilution Factor: 1.00 Column: (pack/cap) PACK

CONCENTRATION UNITS:

(ug/L or ug/Ka) UG/L Number TICs found: 0

CAS NUMBER	COMPOUND NAME	: : RT	EST. CONC.	:
1				 
3				 
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. \_\_\_\_\_\_\_

Lab Name: PACE Contract: 000066

Lab Code: PACE Case No.: EPC SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 3784.6

Lab File ID: J2776 Sample wt/vol: 5.0 (g/mL) ML

Level: (low/med) LOW Date Received: 5/22/91

% Moisture: not dec. 100. Date Analyzed: 5/30/91

Dilution Factor: Column: (pack/cap) PACk 2.50

#### CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L 74-87-3-----Chloromethane \_\_\_\_\_: 25. : U 74-83-9-----Bromomethane\_\_\_\_\_: 25. :11 75-01-4------ Vinyl Chloride\_\_\_\_\_ ; 25. : U 75-00-3-----Chloroethane\_\_\_\_\_\_ 25. : U 75-09-2-----Methylene Chloride\_\_\_\_\_ 12. : U 25. :11 75-15-0-----Carbon Disulfide\_\_\_\_\_ 12. : U 75-35-4----1,1-Dichloroethene\_\_\_\_\_: 12. : U 75-34-3----1,1-Dichloroethane\_\_\_\_: 6. : J 540-59-0-----1.2-Dichloroethene (total)\_\_( 17. 67-66-3-----Chloroform\_\_\_\_\_ 12. : U 107-06-2----1,2-Dichloroethane\_\_\_\_\_| 12. : U 78-93-3------: 25. : U 71-55-6-----1,1,1-Trichloroethane 13. 56-23-5-----Carbon Tetrachloride\_\_\_\_\_! 12. 111 25. :U 75-27-4-----Bromodichloromethane\_\_\_\_\_ 12. :U 78-87-5----1,2-Dichloropropane \_\_\_\_\_ 12. :U (10061-01-5-----cis-1,3-Dichloropropene \_\_\_\_( 12. : U 79-01-6-----Trichloroethene \_\_\_\_\_: 22. : 124-48-1-----Dibromochloromethane\_\_\_\_\_ 12. : U ا19اتهان 79-00-5-----!,1,2-Trichloroethane \_\_\_\_\_! 1272 ;U 71-43-2-----Benzene \_\_\_\_\_ 12. !U 12. ١U 75-25-2----Bromoform \_\_\_\_\_; 12. :U 108-10-1----4-Methyl-2-Pentanone\_\_\_\_\_\_ 25. :U 591-78-6----2-Hexanone\_\_\_\_\_ 25. :U 127-18-4----Tetrachloroethene 520. 79-34-5----1.1.2,2-Tetrachloroethane \_\_: 12. : U 108-88-3-----Toluene 12. :U 108-90-7-----Chlorobenzene \_\_\_\_\_ 12. l U 100-41-4-----Ethylbenzene\_\_\_\_\_ 12. :U 100-42-5-----Styrene \_\_\_\_\_| :11 12. | 1330-20-7-----Xylene (total)\_\_\_\_\_

12.

: U

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	52-22	Ĉ
,		, –

Lab Name: PACE

Contract:

'Matrix: (soil/water) WATER

Lab Sample ID: 3784.6

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2776

evel: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Number TICs found: 0

Date Analyzed: 5/30/91

Column: (pack/cap) PACK

Dilution Factor: 2.50

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	: COMPOUND NAME	: : RT :	: : EST. CONC.	: : 0 :
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18;		!	!	;
20		!		!
22.		;	'	;
23;				
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			!	:

## 1 A VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 1 63-22

Lab Name: PACE

Contract:

00056 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 3785.4

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2777

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Date Analyzed: 5/30/91

Column: (pack/cap) PACk

Dilution Factor: 10.00

CONCENTRATION UNITS:

CAS NO. COMPOUND	ug/L or ug/kg) UG/L	Ω
1	]	1 1
: 74-87-3Chloromethane	100.	:U :
1 74-83-9Bromomethane	100.	:U :
1 75-01-4Vinyl Chloride	100.	:0 :
75-00-3Chloroethane	100.	:U :
! 75-09-?Methylene Chloride	50.	:U :
67-64-1Acetone	100.	:U :
; /5-15-0Carbon Disulfide	; 50.	:U :
1 75-35-41.1-Dichloroethene	; 50.	10 1
1 75-34-31,1-Dichloroethane	: 50.	: U :
1 - 540 - 59 - 0 1, 2 - Dichloroethene		† J
67-66-3Chloroform	50.	: U
107-06-21,2-Dichloroethane	; 50.	: U :
1 78-93-32-Butanone	100.	:U :
: 71-55-61,1,1-Trichloroetha	ane 51.	1
: 56-23-5Carbon Tetrachloric	de 50.	: U :
108-05-4Vinyl Acetate	100.	: U:
: 75-27-4Bromodichloromethar	ne! 50.	: U:
: 78-87-51,2-Dichloropropane	∍; 50.	:U :
110061-01-5cis-1,3-Dichloropro	opene   50.	(U (
79-01-6Trichloroethene	77.	; ;
: 124-48-1Dibromochloromethar	ne: 50.	: U :
<pre>79-00-51,1,2-Trichloroetha</pre>	ane  50.	មេ ៖
71-43-2Benzene	: 50.	: U
10061-02-6Trans-1,3-Dichlorop	propene   50.	: U :
75-25-2Bromoform	: 50.	: U:
: 108-10-14-Methyl-2-Pentanor	ne   100.	:ប :
591-78-62-Hexanone	100.	:U :
127-18-4Tetrachloroethene	1900.	;
: 79-34-51,1,2,2-Tetrachloro	pethane : 50.	ו טו
108-88-3Toluene	50.	: U
l 108-90-7Chlorobenzene	50.	Ū ;
100-41-4Ethylbenzene	50.	U :
100-42-5Styrene	50.	Ü
1330-20-7Xylene (total)	50.	Ü :
		!

# VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

Lab	Name:	PACE			Contract:	
_ab	Code:	PACE	Case No.:	EPC	SAS No.:	SDG No.: 00057

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2777

evel: (low/med) LOW Date Received: 5/22/91

% Moisture: not dec. 100. Date Analyzed: 5/30/91

Column: (pack/cap) PACk Dilution Factor: 10.00

CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/kg) UG/L

CAS NUMBER	COMPOUND NAME	; : RT !=======	: EST. CONC.	: Q ;
' 1.				;;
; 3				
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## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ab Name: PACE

Contract:

atrix: (soil/water) WATER

Lab Sample ID: 3786.2

Cample wt/vol: 5.0 (g/mL) ML

Lab File ID: J2832

Level: (low/med) LOW

Date Received: 5/22/91

Moisture: not dec. 100.

Date Analyzed: 6/ 1/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

		CONCENTRATION UNITS:
CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L

	CAS NO.	COM COMP (Adve of ad	, , å, , 00, E	G	
; -			;		;
;	74-87-3	Chloromethane	100.	١u	;
;	74-83-9	Bromomethane	100.	:υ	:
;	75-01-4	Vinyl Chloride	100.	:ប	;
;	75-00-3	Chloroethane	100.	:U	1
1	75-09-2-	Methylene Chloride	50.	:U	1
:	67-64-1	Acetone	100.	: U	;
;	75-15-0-	Carbon Disulfide	50.	١u	;
;	75-35-4-	1,1-Dichloroethene	50.	:U	;
;		1,1-Dichloroethane		:U	:
;	540-59-0-	1,2-Dichloroethene (total)	1 50.	١U	;
;	67-66-3-	Chloroform	50.	t U	;
;	107-06-2-	1.2-Dichloroethane	50.	: U	:
;	78-93-3-	2-Butanone	100.		;
!	71-55-6-	1,1,1-Trichloroethane	; 36.		;
1	56-23-5-	Carbon Tetrachloride	50.	; U	;
;	108-05-4-	Vinyl Acetate	100.	:U	;
t	75-27-4-	Bromodichloromethane	50.	: U	1
;	78 -87 -5 -	1,2-Dichloropropane	50.	١u	;
110	0061-01-5-	cis-1,3-Dichloropropene	50.	:U	:
:	79-01-6-	Trichloroethene	59.	:	1
;	124-48-1-	Dibromochloromethane	50.	١U	;
;	79-00-5-	1,1,2-Trichloroethane	50.	:U	;
;	71-43-2-	Benzene	50.	÷υ	;
110	0061-02-6-	Trans-1,3-Dichloropropene:	50.	:U	1
;		Bromoform	50.	l U	;
¦	108-10-1-	4-Methyl-2-Pentanone	100.	: U	i
Į.	591-78-6-	2-Hexanone	100.	:U	:
:	127-18-4-	Tetrachloroethene:	2000.	1	1
ł	79-34-5-	1,1,2.2-Tetrachloroethane!	50.	١U	:
:	108-88-3-	Toluene	50.	l U	1
;	108-90-7-	Chlorobenzene	50.	١U	;
:	100-41-4-	Ethylbenzene	50.	; U	:
:	100-42-5-	Styrene!	50.	١U	}
1	330-20-7-	Xylene (total)	50.	١U	;
١				_	_ ;

## VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

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Lab Name: PACE

Contract:

SDG No.00066

Matrix: (soil/water) WATER

Lab Sample ID: 3786.2

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: J2832

Level: (low/med) LOW

Date Received: 5/22/91

% Moisture: not dec. 100.

Number TICs found: 0

Date Analyzed: 6/ 1/91

Column: (pack/cap) PACK

Dilution Factor: 10.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

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CAS NUMBER !	COMPOUND NAME	; RT	EST. CONC.	
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